Understanding preschool children's emotional eating

exploring the role of emotion regulation and feeding practices in the development of childhood obesity

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Understanding Preschool Children's Emotional Eating: Exploring the Role of Emotion Regulation and Feeding Practices in the Development of Childhood Obesity

By

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Library Declaration

Content removed on data protection grounds

Ethical Approval

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Student Declaration

I declare that the content of this thesis is entirely my own work and has not been submitted as part of any degree at another university.

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Statement of Contribution

The author of the thesis has contributed the following:

Chapter 1 - The author conducted the background search of the area and completed the introduction and narrative in its entirety.

Chapter 2 - The author wrote up the general methodology in its entirety and refers to it throughout the remaining chapters when discussing methodological principles.

Chapter 3 - The author carried out a Quantitative Systematic Literature Review and Meta-analysis, with screening and 2nd reviewer support from the supervisory team.

Chapter 4 - The author prepared and carried out an online cross-sectional study and path analysis with support from the supervisory team.

Chapter 5 - The author conducted a qualitative interview-based study via the software Qualtrics with support from the supervisory team.

Chapter 6 - The author wrote the discussion of the thesis in its entirely, containing the authors own interpretations of the data and the conclusions of the findings within the thesis.

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Thesis Abstract

Background: Emotional eating (EE) is a negative, non-homeostatic trait, found in some individuals when dealing with stress-eliciting events, leading to changes in food intake. It is defined as either emotional undereating (EUE) or emotional overeating (EOE). Previous research suggests parent feeding styles (PFS), a sub-category of a parenting behavioural construct in feeding, and parental feeding practices (PFP), a goal-directed behaviour used to influence child's eating, play a role in the development of EE in preschool aged children, however their relationship alongside other factors regarding parent and child emotionality remains unclear.

Aim and Objectives: To investigate the role of parental and child emotionality, specifically, parental emotion regulation (ER), parent affect in feeding, parental EE, and child temperament, on the use of PFS and PFP and on the development of children's EE behaviours. The main objectives are: (1) To pool current evidence of associations between PFS and PFP and the development of EE in children, (2) To investigate interplay and relationships of these variables within a cross-sectional study using path analysis, (3) To explore the experience of parents' and child's emotionality and behaviours that illuminate these factors within the family environment.

Methods and Results

Study 1 A systematic review and meta-analysis of the existing evidence was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Six papers were included from search results of 10,269, with PFP; restriction, pressure to eat (PTE), emotional feeding, and use of food as a reward (UFAR) associated with higher levels of EOE, and monitoring with lower levels. Restriction and PTE were associated with higher levels of EUE and monitoring with lower levels. Meta-analyses found significant positive associations between Restriction and EOE (0.149, $p<0.001$), and negative associations between Monitoring and EOE (-0.148, $p<0.001$) respectively. Authoritative and indulgent PFS were associated with higher and lower EOE levels respectively. No associations were found between PFS and EUE.

Study 2 A cross-sectional study following the STROBE (STrengthening the Reporting of OBservational studies in Epidemiology) guidelines. 1,712 non-randomly sampled parents of preschool aged children completed an online survey. Path analysis showed that whilst controlling for all variables, significant positive associations were found between both children's EOE and EUE and poor parental ER strategies (0.200 [0.365, 0.035] and 0.153 [0.210, 0.096] respectively), children's food responsiveness (0.342 [0.493, 0.191] and 0.188 [0.239, 0.137] respectively), as well as parents' EE (0.176 [0.301, 0.051] and 0.134 [0.177, 0.091] respectively). Results showed positive associations between children's EUE and controlling feeding practices UFAR (0.189 [0.246, 0.132]) and 'PTE' (0.116 [0.173, 0.059])', children's own negative affectivity (0.102 [0.139, 0.065]), parents' negative AF (0.175 [0.212, 0.138]). Negative associations were found between EUE and parents' positive AF (-0.176 [-0.139, -0.213]), and children's enjoyment of food (-0.238 [-0.185, -0.291]). Lastly, positive associations were found with EOE and controlling PFP 'restriction for weight' (0.333 [0.586, 0.080]), and although the largest of the associations found, this was relatively weak.

Study 3 A qualitative semi-structured interview study with 21 parents was conducted, following COREQ (Consolidated criteria for reporting qualitative research) guidelines. Thematic analysis found themes; 'The Mealtime Battleground', 'Food for Non-nutritive Purposes', 'The Mirroring of Emotional Eating', 'Who's in Charge', 'Realisation of Behaviours', and 'The Catalyst of Emotion'. The findings highlight the challenges parents discuss regarding their own emotionality and the child's individual characteristics in the feeding and eating environment.

Conclusion: The development of EE is not solely dependent on the parents actions, such as PFS and PFP, but may be explained in part by a combination of parental ability to regulate one's own emotions during the mealtime experience, and the children's own temperament regarding emotional situations and circumstances. Experientially, these give rise to emotionally charged parent/child encounters.

KEY WORDS: *Emotional Eating, Emotion Regulation, Parental Feeding Practices, Child Temperament, Parent affect in Feeding.*

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Abbreviations

Abbreviation	Full term presented within the thesis
EE	Emotional Eating
EF	Enjoyment of Food
EOE	Emotional Overeating
ER	Emotion Regulation
EUE	Emotional Undereating
FR	Food Responsiveness
LAERS	Limited Access to Emotion Regulation Strategies
LEA	Lack of Emotional Awareness
LEC	Lack of Emotional Clarity
PFP	Parental Feeding Practices
PFS	Parental Feeding Styles
PTE	Pressure to Eat
SD	Standard Deviation
UFAR	Use of Food as a Reward
UFER	Use of Food for Emotional Regulation

Glossary

Table	Tables within the Thesis
Parent Affect in Feeding	The positive or negative emotionality of the parent during feeding
Emotional Eating	The overeating or undereating of foods dependent on one's feelings and emotions.
Emotion Regulation	To control and influence the experience and expression of their own emotion.
Temperament	An individual's characteristics within their personality and character
Parental Feeding Practices	Parental strategies to effect or change, modify or adapt a child's eating behaviour.
Child Overweight and Obesity	Children's abnormal and excessive fat accumulation
Parental Feeding Styles	The combination of element of control and demandingness to change, modify or adapt a child's eating behaviour.

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Thesis Overview

The Thesis comprises of six chapters: a background and introduction; a general methodology; three studies including a systematic review and meta-analysis, a cross-sectional study and a qualitative thematic analysis; and a discussion.

Chapter 1 introduces the background area of interest relevant to this thesis. The chapter will present an introduction to obesity and the development of eating behaviours, particularly emotional eating within preschool aged children, alongside its relationship with parental behaviours and feeding practices. This chapter will discuss the gap in the literature and thus the context for the research needed.

Chapter 2 provides an outline of the general methodological principles used within this thesis, including the detailed description of the validated questionnaires and subscales and the research design for the ensuing studies. Section 2.1 discussed the research design used within the thesis including systematic literature review and meta-analysis,

cross-sectional studies and qualitative studies. Section 2.2 describes the questionnaires used across the thesis in both the systematic review and cross-sectional study. Section 2.3 discusses the ethics behind the thesis with 2.4 summarising and introducing the next 3 chapters.

Chapter 3 presents the systematic literature review and meta-analysis on parental feeding styles and practices, and their relationship with emotional eating in preschool aged children. The chapter begins with an introduction to the literature and the gap to where the systematic literature review and meta-analysis lies. The review discusses six papers and conducts three meta-analyses. The chapter is broken down in a further 4 sections; Section 3.1 introduces a brief background which helped to develop the rationale for the review. Section 3.2 discusses the detailed systematic methodological principles involved. Section 3.3 relays the results of both the systematic review and meta-analysis findings. Section 3.4 discusses the findings and links to current literature, strengths and limitations of the study and future directions.

Chapter 4 presents the findings of a large internationally based quantitative study focusing on the multi-dimensional relationship between parental and child factors and the development of emotional over and undereating behaviours. The path analysis will be discussed regarding the use of: parental feeding practices; parent affect in feeding; parent emotion regulation and parent's own emotional eating behaviours, alongside the preschool aged children's temperament and their emotional eating behaviours. This chapter will discuss the findings from over 1,700 participants across developed countries across the UK, USA, Australia and Europe. This chapter is split into four main sections, with section 4.1 summarising the background for the study, 4.2 focusing on the specific methodology including the research aims, population, procedure, measurements and analysis. Section 4.3 presents the main findings and focuses on the results of the path analysis and the study. Section 4.4 then begins the discussion of the chapter, regarding

the findings and what these mean in regard to the current gap in the literature and population. It concludes with the strengths and limitations, the practical implications and future directions of the study.

Chapter 5 presents the findings from a qualitative interview-based study from 21 participants across Warwickshire and the West Midlands, exploring parents' experiences and challenges faced when feeding their preschool aged child. This chapter is split into four main sections, with section 5.1 summarising the background for the study, rationale and research aims. Section 5.2 discusses the specific methodology including the research population and design, interview procedure and analysis. Section 5.3 presents the six themes and the interpretation of the results. Section 5.4 begins the discussion of the chapter, with the interpretation of the findings, the strengths and limitations of the study and the practical implications.

Chapter 6 encapsulates all the findings within this thesis and integrates the discussions presented within each study. This chapter helps to contextualise the findings from this thesis, and provides summaries, discussion of the strengths and limitations, and where the research fits within previous literature and existing findings. An overall conclusion of the research is drawn, implications of the research discussed in detail, and suggestions for future research are made. This chapter is split into five main sections, with 6.1 summarising the aims and objectives of the thesis. Section 6.2 continues on to discuss the main summary of results across the thesis. Section 6.3 highlights the strengths and limitations of the thesis with section 6.4 discussing the practical implication and future directions for research. Section 6.5 then concludes and summarises the thesis.

1. Introduction and Background

This introduction begins with an account of the global prevalence of obesity, and the current childhood obesity problem. It discusses the development of childhood obesity and the differing factors that may impact the development of maladaptive emotional eating behaviours.

1.1. What is Obesity

Obesity is defined as an abnormal accumulation of adipose tissue, known as fat, around the body that presents a risk to one's health (WHO 2020). Crudely speaking, this increase in tissue occurs when a calorie intake exceeds the body's daily expenditure (Trandafir et al., 2015). Overweight and obesity can heighten the risk of developing chronic diseases, including diabetes, musculoskeletal disorders, cardiovascular diseases and cancers (Johnson, 2015).

1.1.1. Measure of Obesity

A general measure of having overweight and obesity in adulthood is using the Body Mass Index (BMI), which is calculated by a person's weight (in kilograms) divided by the square of their height (in metres), BMI = kg/m². From this formula, a person with a BMI of 25 or more is considered having overweight, and a person with a BMI of over 30 or more is considered having obesity (WHO 2020). The measurement of BMI for children is not widely used due to their changes and growth throughout childhood, therefore the UK instead uses either BMI Z scores or child growth percentiles. BMI Z scores are calculated as 'BMI Z-score = $(x-\mu)/\sigma$', where x is the raw score, μ is the population mean, and σ is the population standard deviation, described as the raw score minus the

population mean, divided by the population standard deviation. Alternatively, child growth standards percentiles used such data as BMI-for-age, with a sex-appropriate growth chart mapped as; < 5th as underweight, 5th < 85th as normal weight, 85th < 95th as overweight and > 95th as obese. This classifies a child under the age of 5 as having overweight or obesity if their weight is two or three Standard Deviations above the WHO Child Growth Standards median respectively. Children between the ages of 5 and 19 years of age are defined as having overweight or obesity if they are one or two standard deviations away from the WHO Growth Reference Median respectively

1.1.2. Prevalence of Obesity

Global obesity has become a major health concern with its prevalence nearly tripling since 1975, as recent statistics show 39% and 13% of the worldwide population now classify as having overweight and obesity respectively (WHO 2018). Overweight and obesity is not just a problem prevalent in adulthood, with childhood obesity itself now constituting a public health problem (Kumar & Kelly 2017). According to the World Health Organisation (2016), childhood obesity is one of the greatest public health challenges in the 21st century, with over 41 million children under the age of 5 now having overweight or obesity.

Obesity statistics in the United Kingdom (UK) are a growing concern, with levels of obesity having risen 92% in the UK in the last two decades, and obesity projections showing a steady increase until 2030. The UK statistics now show 28.7% of adults are clinically obese, and a further 35.6% are classed as having overweight but not obesity (POS 2019). Paediatric obesity is one of the most serious health problems within the 21st century, increasing rapidly across different countries. According to recent statistics, over a third of UK Children (34.3%) by the age of 11 are now classed as having overweight

(20.2%) and obesity (14.1%). Current statistics show 22.8% of four- to five-year-old children are now classed as having overweight (12.8%) or obesity (9.5%) (GOV, 2021).

1.1.3. Aetiology of Obesity

Childhood obesity is not only a present challenge but for the future of children as they mature into adulthood. The aetiology of obesity in young children is one of much interest to researchers, with biological, genetic, social and psychological explanations emerging. In the average human adult, the body consists of approximately 30 billion fat cells, with excessive development of fat either enlarging the current fat cells – hypertrophy, or increasing the number of fat cells – hyperplasia (Bonnet 1981). Recent systematic review studies into childhood obesity have found preschool aged children with overweight or obesity are five times more likely to be overweight in adulthood compared to their healthy weight children counterparts (Simmonds et al., 2016).

With weight gain defined as ‘an imbalance between calorie intake and calories utilized’ (Karnik & Kanekar 2012) research discusses differences between adult and child calorie requirements. In comparison to the average 2,000 to 2,500 calories per day for an adult (NHS 2020), preschool children need on average 1,400 calories depending on their daily activity levels (NHLBI 2010). This is due to extra calorie expenditure required for activity, growth and development in children, whereas adults require only enough energy to be active (Ross 2012). It could be suggested that a child’s increase in weight may be associated with exceeding this extra energy requirement. With this energy imbalance being the ultimate cause of excess adiposity deposition, it is argued by Swinburn and colleagues (2006) that a high total energy intake was the main determinant for high body weight in children rather than a low total energy expenditure. This provides rationale for

the focus on energy intake as priority, in particular the factors that change the amount consumed by children that may lead to overeating and subsequent weight gain.

Genetic factors, lifestyle preferences, cultural choices and the environment play pivotal roles in the aetiology of childhood obesity (Sahoo et al. 2015). This is recognised in research at both a genetic level and environment level, with research finding associations between primarily genetics and then environmental factors across a range of BMI variations (Haworth et al., 2008; Silventoinen et al., 2010). Research suggests that having one or more obese parent makes children significantly more likely to be obese than their non-obese parent family counterparts (Jahnke & Warschburger 2008), with narrative reviews of both twin and family studies discussing how adult BMI is a high heritable trait, and genetic differences explaining a proportion of variation (Maes, Neale, Eaves 1997; Naukkarinen et al. 2012). Whilst their findings explain heritability as a trait, environmental and behavioural pathways are also considered. This is discussed in a recent systematic review and meta-analysis of 14 twin or adoption studies by Silventoinen and colleagues (2010). Their results suggested a stronger relationship of obesity between parents and biological offspring; however correlations were also found between adoptees and adoptive parents suggesting the role of family environment is important in the development of obesity. The assumption is that the correlations between biological pairs is due to genetics and the adoptive pairs due to environment. However, this assumption may be violated if, for example, the adoptive parents was still a close relative of the child, or the child had continued contact with their biological parent after adoption. The ability to separate the biological from environmental factors has begun to be further explored in longitudinal research focusing on a large cohort of twins in the GEMINI twin study (Van Jaarsveld et al., 2010). Recent data discusses heritability estimates for appetitive traits were moderate to high; between 50% to 90% (Llewellyn & Wardle, 2015; Cooke & Llewellyn, 2016). Therefore, with the suggestion in research that parents with overweight are more likely to have a child with overweight (Jahnke &

Warschburger, 2008), whereas the notion that it is not uncommon for one sibling to be lean whilst the other has overweight (Llewellyn & Wardle, 2015) may suggest an interplay between familial transmission and influences associated with eating behaviours and weight gain.

In addition to the causes and development of childhood obesity, the health consequences of childhood obesity are noted, not only at a biological level, but also at a psychosocial one. Biologically, obesity affects children by increasing the risk of cardiovascular diseases and type 2 diabetes amongst many other issues (Sahoo et al., 2015). Social consequences of obesity are shown to include such elements as social exclusion and peer problems by middle childhood. Zeller, Reiter-Purtill and Ramey (2008) conducted a class-based two-part study and found children (n=166) between 8 and 16 years old were significantly less likely to nominate a peer with overweight as a best friend and categorised them as less physically attractive. This is mirrored in a laboratory interview study (Patel and Holub 2011) with a cohort between 4 and 8 years old (n=51). The children reported that they would be less likely to help their peer with overweight when asked to do everyday tasks such as picking up toys. They were also significantly less likely to choose a best friend with overweight in comparison to a peer of a slim or healthy weight. It must be noted however that the methodology used in this study was suggested to be less appropriate for older children as the content were set for a younger age range, and the task used for 'willingness to help' had not yet been formally validated, thus other factors such as socially desirable responding could be at play. Children with overweight or obesity have lower quality of life, internalising and externalising problems, depression, and body image dissatisfaction (Gouveia et al. 2014). This study however, being cross-sectional in nature, may suggest correlation of body dissatisfaction, quality of life and obesity could be bi-directional in nature. Overweight and obesity alongside these depressive and negative emotions have therefore been associated with numerous factors, such as lack of self-esteem due to

stigmatization and teasing (Latner and Stunkard 2003). These factors may enhance the propensity of the development of maladaptive emotion regulation strategies. Being subjected to negativity, both internally in one's own thoughts and externally through peers, the potential inability to cope with these emotions may be reflected in maladaptive eating behaviours as a way to neutralise feelings (Evers, Stok and Ridder, 2010).

1.2. Children's Eating Behaviours

Children's eating behaviours that are related to childhood weight, particularly regarding childhood obesity, develop in the preschool years (Carnell & Wardle, 2007). Eating behaviours are broadly categorised into two areas of 'food approach' behaviours and 'food avoidant' behaviours (Wardle et al. 2001). Food avoidant behaviours are characterised by a reduced interest in food, a lesser appetite, and subsequently the reduction of food intake. Examples of these behaviours include Satiety Responsiveness (SR; sensitivity to internal level of fullness), Slowness in Eating (SE; general pace of eating), Food Fussiness (FF; the refusal to try new foods or picky about foods), and Emotional Undereating (EUE; the tendency to eat less in response to negative emotions). In comparison, Food Approach behaviours are characterised by an increased interest in appetite and food and subsequently the tendency to overeat. Examples of these are Desire to drink (DD; the tendency of the child wanting to drink), Food Responsiveness (FR; the tendency to eat more food if it tasty and more appealing), Enjoyment of food (EF; increased pleasure and reward from eating) and Emotional Overeating (EOE; the tendency to eat more in response to negative emotions).

These eating behaviours, both within their subcategories of food approach and food avoidance behaviours, are widely seen to positively correlate with each other. Research by Sledden, Kremers and Thijs (2008) showed 6 and 7 year old children high in FR also exhibited increased levels of EF and EOE behaviours, and children high in SR also

exhibited increased levels of SE, FF, and EUE. This cross-sectional study (n=135) found significant positive correlations between food approach behaviours, significant positive correlations between the food avoidant behaviours, and significant negative correlations between food approach and avoidant behaviours. The only factors to significantly positive correlate between the food approach and food avoidant behaviours is between EUE and EOE ($r = 0.41$, $p < 0.001$). One would expect to find overeating due to negative emotions to negatively correlate with undereating due to negative emotions, however this is in fact not the case (Sledden et al., 2008). Although cross-sectional in design, this study gives good insight into the positive and negative correlations between factors. Much of the evidence and previous literature discussed in the subsequent sections of the introduction and background is cross-sectional in design. Therefore, whilst being able to discuss the relationship between factors in question, due to the nature of their methodology directionality cannot be established. This precludes the possibility of establishing causal inferences and instead may infer the option of bi-directional relationships within this data.

Further discussion regarding the relationship between EUE and EOE has also been researched within a large twin cohort study (n=2,054), with Herle and colleagues (2017) also finding both EUE and EOE positively correlated with one another (r-0.43, $p < 0.001$) indicating that children who emotional overeat tend to also emotional undereat. The study also suggested that the association of EUE and EOE were explained largely by common shared environmental influences, including but not limited to the use of parental behaviours (Vaughn et al., 2016). The methodological limitation with both of these studies is parental report of their child's behaviours. Although research (Carnell & Wardle 2008) has previously suggested that parents' reports on their children's eating behaviours correlate well with actual eating behaviours, it is still open to elements of bias and must be interpreted with caution.

1.2.1. Emotional Eating

Emotional Eating (EE) is defined as a negative, non-homeostatic trait; a dysfunctional coping strategy when dealing with stress-eliciting events that leads to a change in food intake (Messerli-Burgy et al. 2018). It is the change in one's eating behaviour in response to a negative single or set of emotions. Research has shown that some tend to consume more food during a stressful situation, leading to EOE, and others experience a loss of appetite and subsequently eat less, leading to EUE (Macht 2008).

Important questions have arisen in research regarding the aetiology and understanding of both EOE and EUE, and their relationship with health and weight status. EOE has been the focus of several recent longitudinal research, with evidence of people consuming more in stressful situations, leading to an increase in weight status in both adults and children (Dohle et al., 2014; Parkinson et al., 2010; Steinsbekk & Wichstrom, 2015). Conversely, EUE has also been highlighted with people experiencing a loss of appetite when distressed, subsequently eating less, leading to negative associations with weight in both adults and children (Jansen et al., 2012; Mallan et al., 2017). This relationship remains in question however, with some research showing the association between EUE and a lower weight status whilst others have not (Haycraft et al., 2011; Bjorkland et al., 2019). Whereas EOE may be suggested to be a maladaptive eating behaviour leading to increased weight status, the long-term consequences of EUE are still unclear. Whilst some studies suggesting EUE may be seen as a protective behaviour in the risk of obesity (Herle et al., 2017), others have suggested childhood EUE to be a risk factor in the development of adult eating disorders (Kim et al., 2010). A further factor which makes it important to examine both EOE and EUE is that there is typically a positive association between these eating behaviours within children (Herle et al., 2017),

which may help to explain the inconsistencies within the literature. The relationship between these two different yet related eating behaviours should be further explored to help delineate the predictors of these behaviours (Sledden et al., 2008; Herle et al., 2017).

Questions regarding the relationship between EOE and EUE discuss whether they are aetiologically distinct, or part of the same underlying behaviour and outcomes dependent on the strength of the emotional experience, be it for example acute or chronic. EE has, for example, been shown to relate to negative emotions, such as depression and anxiety within adults (Lazarevich et al., 2016) and adolescents (Goussens et al., 2009; Fox et al., 2015). However, with these studies being cross-sectional in nature, it cannot be concluded that emotions such as depression and anxiety create overeating behaviours, as it may be just as reasonable to suggest that EE behaviours could create feelings of depression and anxiety. What can be concluded however is that for some individuals, emotional events can be associated with EE behaviours, although the direction cannot be currently established. It may be that the perceived internal level of the emotional experience by the individual may in turn create differing EE behaviours. This idea is further discussed within the theories of EE (section 1.2.1.3).

In addition to the limitations of cross-sectional design in many of the studies within EE literature, the use of validated scales is challenging when focusing on EE, with EOE and EUE seen as either individual behaviours or a subset of the same behaviour. EE, distinguished into two subsections EOE and EUE, is normally measured in studies using the Children's Eating Behaviour Questionnaire (CEBQ; Wardle et al 2001). The Dutch Eating Behaviour Questionnaire (DEBQ; Van Strein et al 1986) and the adapted version for Children (DEBQ-C; Baños et al., 2011) however, just discusses EE as one subscale, although the questions derived from the scale only discuss overeating in regard to

negative emotions. This becomes difficult when discussing previous research and findings, as well as summarising and collating knowledge from peer reviewed papers.

When focusing on EUE as an individual behaviour, the validated scales The Adult Eating Behaviour Questionnaire (AEBQ; Hunot et al. 2016) and the Child Eating Behaviour Questionnaire (CEBQ; Wardle et al. 2001) attempt to distinguish between EOE and EUE behaviours. With very few studies focusing on EUE as an EE behaviour, a recent laboratory-based study by Blissett, Farrow and Haycraft (2019) provided moderate support for the validity of the EUE subscale of the CEBQ, finding children who rated as higher on the EUE subscale ate significantly less crisps in a negative mood than a neutral mood state ($z = -2.11$, $p<0.05$). This study is the first of its kind to investigate the use of the EUE subscales within laboratory setting. Although the sample size was small (n=62), and thus underpowered to detect small effects, the study still showed a moderate support for the validity of the EUE scale in the CEBQ. The use of this scale would benefit from a larger study to test the effects at a larger sample size and power, to explore the EOE and EUE behaviour measurements.

1.2.1.1. Emotional Eating and Stress

Psychological stress has been attributed to a change in dietary behaviours, with more unhealthy eating patterns such as EE in adulthood (Chao et al., 2016) and childhood (Michels et al. 2012). These cross-sectional studies found both adult perceived stress and child negative daily hassles were both associated with EE behaviours; with Chao et al. (2016) finding a significant relationship between adult perceived stress and EE (N= 249; $B=0.009$, $p<0.001$), and Michels et al. (2012) a significant positive relationship between child daily negative hassles and EE (n=437; $r=0.292$, $P<0.01$). In addition, varying levels of stress, whether acute or chronic, have been suggested to lead to

differing behavioural outcomes. According to an endocrinological review (Charmandari et al. 2005), acute stress is associated with inhibition of digestive function and loss of appetite, and chronic stress with an inclination to seek out and consume energy-dense foods.

Focusing on the relationship between stress and the development of EE, research has begun to uncover the links between intensity of stress and EOE childhood population. An observational experimental study found that when creating a mildly stressful situation for children aged between five and seven years old, they consumed significantly more in the absence of hunger than the control group (Farrow et al., 2015). This longitudinal study followed parents and children (n=35) at two time points 2 years apart, measuring feeding practices via parental self-report questionnaires and children's eating behaviours via an experimental mood-inducing or control group event. The study found that children exposed to the emotional mood-inducing event at time point 2 consumed significantly more calories (mean (SD) of 109.27(123.7) kcals) than the control group (30.17(48.91) kcals) ($p<0.05$). Although there was a very small sample size and numerous factors may have confounded these findings over this period of time, the study has indicated that EOE can be seen in children as young as 5-7 years old and highlights the need for future research to inform the development of guidelines for families. Similar studies looking at a younger population of children have produced inconsistent findings. A laboratory-based study (Blissett, Haycraft & Farrow, 2010) with 3-5 year old children (n=26) did not find the same result of mood manipulation or stressors and EOE, instead they found an association between the use of the parental feeding practice UFER and EOE, regardless of the mood manipulation condition, ($F=11.29$, $p<0.01$). Although the study had a small sample size of 26 children, and thus was underpowered to detect small effect sizes, the study still showed a relationship between certain parental feeding practices (PFP) and EOE, which should be further explored. From these studies one could suggest that as children get older, EOE behaviours are more overtly established. This idea of an 'age

factor' was supported across other studies, with a general understanding that around 5 years old EOE begins to be apparent (Ashcroft et al., 2008). It could be suggested that at a young age, children are provided food at snack and mealtimes, whereas as they get older they are able to seek out desired food from their caregiver. This development of ingestive behaviours is discussed by Ashcroft and colleagues (2008) whose 7-year longitudinal study found that EUE was seen to decrease over the ages of 4 and 11 years old ($t= -6.3$, $p<0.001$) and prevalence of EOE significantly increased ($t= 6.7$, $p<0.001$). It may therefore be argued that children are either predisposed to certain EE behaviours, with EUE being apparent at a younger age, and EOE behaviours then become more noticeable around 5 years old. Alternatively, one could they are a blank canvas with EE instead being a learned behaviour via certain social and environmental factors. Findings from this 7-year longitudinal study create an interesting conversation regarding the development of EE behaviours over time, however potential confounding factors regarding the development of EE behaviours such as the environment or parents own EE behaviours were not discussed.

Given that both EOE and EUE share some common aetiology and are shown to be positively associated with each other (Herle et al., 2017; Wardle et al., 2001), the discussion is still underway how children may exhibit both EUE and EOE behaviours. Research has begun to focus more on an idea that not only age, but also the intensity and levels of stress may in fact impact the directionality of the outcome of EE behaviours. Research has shown links between stress and both EUE and EOE in children. Cross-sectional evidence suggests that children with higher levels of negative affectivity; an encompassing term focusing on sadness, fear, anger and frustration (see section 1.5 for Negative Affectivity); correlates with both EOE and EUE behaviours (Haycraft et al., 2011). EOE and EUE are distinctly different outcomes within a stressful experience. It is possible that differing levels of stress lead to differing EE outcomes, with acute stress associated with EUE type behaviours and chronic stress leading to EOE type behaviours

(Charmandari et al., 2005). It may be that both EUE and EOE behaviours are intrinsically linked within their aetiology, yet are triggered within children via differing levels and intensity of such environmental and social practices and emotionality to be discussed in more detail (section 1.4).

1.2.1.2. Emotional Eating and Weight

EE has been suggested to be associated with a change in weight in both adults and children alike, with EOE and EUE associated with higher and lower levels of weight change respectively (Geliebter & Aversa, 2003). A large longitudinal study in Switzerland (N=3,425) found higher levels of EE at Time 1 were associated with higher BMI one year later ($\beta = .270$, $p < .001$; Dohle et al. 2014). The same association has been investigated in children, with Spence and colleagues (2011) using linear trend analysis to show a significant difference between weight status groups for EOE behaviours in 4 and 5 year old children ($F=6.19$, $p<0.01$). It must be noted that although the researchers discuss this study as a longitudinal cohort study, the data reported in the article is from purely the baseline phase of the study. Therefore, with no follow up time points, an association can be discussed but a directionality and causality cannot be determined. It may be just as likely that a higher weight status could be due to EOE, or the EOE could be due to having a higher weight status.

Whilst Spence and colleagues (2011) found a relationship between weight status and EOE, others did not. A cross-sectional study by Braden and colleagues (2014) found no association between EOE behaviours and child BMI percentile ($r=-0.03$, $p=0.73$), nor did a structural equation model by Kroller, Jahnke and Warschburger (2013), with child's weight (BMI-SDS) and child's EE ($r=0.02$, $p>0.05$). Kroller, Jahnke and Warschburger (2013) constructed a structural equation model looking at maternal and child weight,

eating behaviours, PFP and EE behaviours, finding a positive association between mothers' weight and EOE behaviours, but not that of the child's BMI-SDS and the child's EOE behaviours. Jahnke and Warschburger (2008) examined familial transmission of eating behaviours with 3 to 6 year old children (n=142) and found no association between child BMI-SDS and child EOE, however found a positive relationship between parental BMI and child EOE ($F = 7.27$; $P = 0.008$). Though the cross-sectional nature of these studies precludes causal inferences; having a parent with a higher BMI may be associated with more child EE behaviours, and, vice versa, having a child who eats more in an emotional situation may impact the eating behaviours of the parent leading to a higher parental weight status. These studies show there is still much to learn about the relationship between EE behaviours and weight.

Although there are very few studies looking at EUE, it is an important behaviour to consider in the development of restrained, restrictive and disordered eating behaviours. A cross-sectional study by Geliebter and Aversa (2003) looked at under and overeating behaviours in differing weight categories of individuals across both genders (n=90). They found as hypothesised, the overweight group reported eating more than the normal weight or underweight group during negative emotions and situations ($F=12.2$, $p<0.001$). When focusing on eating due to positive emotions and situations, the converse was seen, with the underweight group reporting more eating than the normal or overweight groups ($F=4.9$, $p=0.01$). These findings further bring into light the level and context of the emotional experience and situation, and whether the relationship between the emotional experience and environment may play a part in over or undereating, such as seen in EOE and EUE behaviours.

Much less research has been found to focus on EUE and weight in children. A large cross-sectional study of 4,987 four year old children in the Netherlands focused on weight, PFP and children's eating behaviours as part of a larger 'Generation R' study

(Jansen et al. 2012). They found that Lower EUE was associated with higher weight status (r=-0.102, p<0.001) and EUE was also positively associated with the use of PTE (r=0.160, p<0.001). In addition, this use of PTE was also negatively associated with child BMI SD or weight status (r=-0.186, p<0.001), suggesting that the use of PTE was associated with children of a lower weight status. Due to the cross-sectional nature of this study however, it could be fathomed that parents of a child with a lower weight status use PTE as a way to increase food consumption. In contrast, a cross-sectional study (n=241) by Haycraft and colleagues (2011) measured both EUE and Child BMI and reported a non-significant result (r=0.073, p>0.05). They did however interestingly find a relationship between children's own emotionality and both EOE (r=.156, p<0.01) and EUE (r=.194, p<0.001). Children's individual characteristics themselves may therefore have a part to play in the relationship between these feeding practices and the development of EE behaviours. With a lack of studies investigating the role that PFP and child's individual characteristics of emotionality have to play on EOE and EUE, this may be an interesting area to consider within the development of these maladaptive eating behaviours.

1.2.1.3. Theories / Models of Emotional Eating

A number of theories and models attempting to discuss the psychological and biological mechanisms behind EE are prominent including; the Psychosomatic Theory of Emotional Eating (Kaplan & Kaplan 1957), Escape theory (Heatherton & Baumeister 1991), Masking theory (Herman & Polivy 1988), Internal/External Theory (Schachter, Goldman & Gordon 1968), and the five-way model of emotional eating (Macht 2008).

The psychosomatic theory of emotional eating (Kaplan & Kaplan 1957) shares theory with classical conditioning, with a learned response between emotion and food

consumption. The theory proposes people who overeat due to emotion have not learned to correctly differentiate between feelings caused by hunger and feelings caused by a negative emotion. It is suggested that parents who use food to dispel a child's negative emotion may inadvertently condition the child to associate negative feelings and stress with food consumption or feelings of hunger (Herle et al. 2018). The link between EE and classical conditioning in adults is further supported by Bongers and Jansen (2017) who conducted a randomised control trial using negative and neutral stimuli, pairing negative emotional stimuli with chocolate. These pairings resulted in a greater desire to consume chocolate in a negative state (B(SE) = 33.52 (10.60), β = .69, t(39) = 3.16, p = .003), which may in turn lead to potential emotionally driven overeating behaviours.

Masking theory (Herman & Polivy 1988) and Escape Theory (Heatherton & Baumeister 1991) have both been used in the discussion of EOE behaviours (Evers et al. 2010; Ouwens et al. 2009), although were first discussed in the context of binge eating within times of emotional distress. The Masking theory by Herman and Polivy (1988) states that overeating is purely an attempt to 'mask' the original source of distress, and by doing so misattributes perceived stress to an overeating outcome behaviour. They state that the overeater falls back on food as a distractor, and overeating allows for a refocusing of anxiety onto a more psychologically manageable source and masks the real and less manageable source of stress and discomfort. Escape Theory (Heatherton & Baumeister 1991) posits that overeating in regard to emotional distress is part of an attempt to 'escape' from the feelings of negative self-awareness. When individuals are confronted with ego-threatening information or negative emotions, according to the escape theory they shift their level of attention to the current and immediate stimulus, such as accessible food. This moves attention away from an aversive emotional stimulus as a means of self-regulating emotions. Within this argument, EOE occurs as a means of decreasing one's negative affect and regulating one's own emotions (Williams et al. 2018).

In contrast to the psychological masking and escapism of stress which food provides, the Internal/External Theory (Schachter, Goldman & Gordon 1968) of EE focuses more on a biologically driven basis for behaviour. The theory proposes that the normal responses for healthy weight individuals, to a stressful situation, is to decrease food intake due to an internal physiology stress mechanism, similar to Van Strien and Ooesterveld's (2008) argument for children's food response to stress and emotion. Schachter, Goldman & Gordon (1968) however argue that individuals with overweight and obesity appetites would be classed as 'abnormal', and not affected by stress in the same way. The theory therefore suggests that instead they overeat due to the inability to respond in normal manner to stress. Thus, instead of the proposed natural response to stress being a decrease in food intake, it is associated with overeating behaviours.

Lastly, the five-way model of emotional eating (Macht 2008) proposes that there are five distinct classes in which emotions play a part in the change in individuals eating behaviours. Firstly the emotional hedonic arousal of certain food choices leading to consumption, secondly the emotional suppression of food intake due to high arousal, thirdly the impairment of cognitive eating controls of restrained eaters leading to an increase of food intake, fourthly the need to eat to regulate certain triggers in emotional eaters due to an ego-threat condition, and lastly the emotion-congruent modulation of eating with adaptations related to the emotion elicited during the eating behaviour.

Each of these theories postulate that before any overeating occurs, an individual must experience negative feelings and emotions that they cannot properly regulate, prompting them to use a strategy that in the short-term will regulate their emotion, but in the long-term may create maladaptive outcomes of EOE behaviours. There are a lack of biopsychosocial theories. Although Macht's (2008) five-way model discusses a reduction in food intake as a response to a high-stress stimulus, which is reiterated by Van Strein

and Ouwens (2007) suggesting that the most natural response is to reduce eating due to a decrease in gut activity during emotional arousal, suppressing feelings of hunger. It can be said however that although more work needs to be done on theories behind EUE, research suggests that EOE and EUE share common aetiology and tend to be positively associated with one another. Therefore, one may presume that overlapping etiological forces are at play within both EE behaviours.

In summary, EOE and EUE are key behaviours that are potentially associated with negative mental and physical health outcomes, including obesogenic eating behaviours. Research illuminating the development of these behaviours in children, is important to identify the underlying aetiology of EE. Identifying early predictors of EE would aid specific and targeted future interventions that could prevent the development of emotional under and overeating in childhood, and potentially prevent any negative health consequences leading to weight change and obesity.

1.3. The Role of the Parent

The parent is suggested to play a fundamental role within their child's development, especially concerning their eating behaviours, food preferences, energy intake, and subsequently their weight status (Davison & Birch, 2001). As previously discussed (section 1.1.3), both environment and genetics play a part in the development of eating behaviours and the familial transmission of such behaviours is known. Parents' influences on the eating behaviours of their children are evident, especially during the development of food preferences across early childhood, with parents being the 'gatekeepers' of young children's food intake (Webber et al., 2010b). During this timeframe, parents actively make food choices for their child, shaping the mealtime environment and reinforcing or dissuading any feeding behaviours they think appropriate

for their child. This element of control regarding the feeding environment and behaviour has been examined in empirical studies, due to the theoretical and practical links to child development and weight status. A systematic literature review by Ventura and Birch (2008) discussed empirical cross-sectional studies of parental feeding behaviours and revealed significant associations with children's preferences and intakes (Wardle, Carnell & Cooke, 2005; Galloway, Lee & Birch, 2003). Being cross-sectional in nature and thus without the temporal precedence required to attribute causality, parenting practices may have a relationship on the eating behaviours of children and vice versa. Parental influence on children's development of eating behaviours is further supported by research suggesting weight status, food preferences as well eating behaviours, specifically EE, may run in the family (Tan & Holub 2015). By focusing on the familial transmission of eating behaviours, a mediation analysis was conducted to explore the effects of parental emotion regulatory feeding practices on parent and child EE behaviours. Prior to the mediation model, significant bivariate positive correlations were found between parental EE and children's EE ($r=0.23$, $p<0.05$), parental EE and use of ER feeding practices ($r=0.28$, $p<0.01$) as well as use of ER feeding practices on child's EE ($r=0.0.35$, $p<0.01$). When controlling for child age and weight status, the mediation model found the link between parents' and children's EE was significantly mediated by ER feeding practices b(indirect) = 0.05, SE = 0.03, [0.01–0.12}, $p<0.05$. This cross-sectional study (n=95) gives insight into the relationship between parental behaviours, feeding practices and children's EE behaviours. The study however did not consider other parental characteristics such as their emotionality when using such feeding practices, which may in turn provide insight into the use of these feeding practices and their links to EE. The findings from this study highlight the need for further research in this area being conducted with a larger sample and other parental psychological factors.

Although other family members, especially those providing informal childcare such as grandparents, have been shown to have a measurable impact on children's feeding

behaviours (Farrow, 2014), parents are still the most prominent caregivers to influence children's eating behaviours. A cross-sectional study (Kroller & Warschburger, 2009) discussed how feeding strategies are associated with food intake by both a direct (with demands or restrictions) or indirect (with modelling or monitoring) nature. Using structural equation modelling, they found direct feeding practices (discussed further in section 1.3.1) such as UFAR were associated with more unhealthful eating ($r = .24$, $p<0.01$), and indirect feeding practices such as monitoring were associated with more healthful eating ($r = .60$, $p<0.01$). This cross-sectional study discusses the relevant parental factors that highlight the relationship between feeding strategies and child's food intake. The study however did not take into account parental internal influences such as parents own eating behaviours, or external influences such as mealtime environment and child internal emotionality playing a part in food intake behaviours. This exploration of research regarding the use of such feeding behaviours, discussed further as PFP (section 1.3.1) and parental styles (section 1.3.2) should be furthered to determine the interaction between the direct and indirect effects on feeding in the development of children's eating behaviours.

1.3.1. Parental Feeding Practices

PFP have been suggested to be a contributing factor in the development of food approach and food avoidant behaviours, which are associated with EOE and EUE behaviours respectively (Herle et al. 2017). Although parents may be well intentioned in their actions, research suggests that some feeding practices, or level of feeding practices used, may be detrimental in the development of children's eating behaviours. For example, in preschool children, lower levels of control over their food choices, such as monitoring intake, are healthy functional strategies for parents to manage children's food consumption appropriately. However, higher levels of control over the children's food

intake, such as PTE and Restriction, are instead suggested to link to subsequent disinhibited eating and higher weight status (Haycraft and Blissett, 2012). This cross-sectional study found that maternal controlling feeding practices were associated with children's eating behaviours, with monitoring significantly negatively associated with EOE ($r=-.357$, $p<0.05$), and PTE and Restriction significantly positively associated with EOE ($r=.300$, $p<0.05$ and $r=.385$, $p<0.01$ respectively). High levels of PTE and Restriction were also significantly positively associated with EUE, with $r=.403$, $p<0.01$ and $r=.299$, $p<0.05$ respectively, once again suggesting the relationship between EUE and EOE behaviours. Although this study is limited in its generalisability due to its small sample size and participants mainly from white middle class households, it still helps to discuss the differing levels of controlling feeding practices and how they relate to EE behaviours, although causality cannot be established. These controlling feeding practices will be discussed in more detail below.

Although the PFP themselves are well established in the literature, the difficulties are faced when attempting to group individual PFP, as their terminologies have significant overlap within research. Wardle and colleagues (2007) suggest that PFP are grouped into four main categories. Pressure, usually to eat more either 'healthy' foods or food in general; Restriction, limiting the access of 'unhealthy' foods, particularly energy dense snacks; Instrumental Feeding, using treats and food as a reward; Emotional Feeding, offering food to manage a child's negative mood state. An additional terminology regarding the discussed feeding practices noted by Farrow and Blissett (2008) refer also to Controlling Feeding Practices, with practices such as; Monitoring, keeping track of the child's food intake; Pressure to Eat (PTE), encouraging the preschool aged child to eat more food that they feel they need; and Restriction, limiting consumption of certain foods or intentionally removing certain foods for weight or health-based reasons (Haycraft & Blissett 2010). Monitoring is deemed less intrusive than its other two controlling counterparts and involves purely keeping track of the child's intake. This is suggested

that Monitoring' is a covert form of control (Farrow and Blissett, 2008), which has been shown to predict less unhealthy eating behaviours and may even be a protective element for the development of overeating behaviours. Lastly, the feeding practice control is also classed as controlling feeding practice and can be further separated into overt and covert control (Ogden 2006). Murashima and colleagues (2012) continue on this definition of control by defining PFP as one of two broad groups, dependent on the level of control used by the parent; directive control feeding practices (controlling; such as restriction, PTE, and UFAR) or non-directive control feeding practices (non-controlling; such as monitoring food intake, modelling, encouragement to eat and teaching children about nutrition). Feeding practices can also be grouped in relation to their associated outcomes, such as maladaptive and adaptive. Both of these definitions overlap, with directive feeding practices associated more often than not with maladaptive outcomes, and non-directive with adaptive outcomes (Fisher & Birch 1999). A third group within PFP may be suggested as 'Non-nutritive' feeding behaviours, using food as a pacifier of emotions instead of for feeding or satiety purposes. These feeding practices such as emotional and instrumental feeding are not being used primarily as a controlling feeding practice with the amount of food consumed, but still having elements of directive control and subsequently associated with the development of maladaptive eating behaviours, particularly EE (Carnell et al. 2014; Rodgers et al. 2014; Braden et al. 2014). As discussed above, the terminologies have significant overlap within the literature, making it less clear what distinguishes between directive and non-directive controlling and restrictive practices. A review by Blissett (2011) highlighted the abundance of definitions and terms and suggested the field should look to agree consistent terminologies, as greater clarity in terminology in the future may yield greater consistency within the literature.

The development of PFP is complex, with evidence suggesting 'intergeneration ripples' where parents develop their feeding practices based on their own feeding experience as

a child (Brewis & Gartin 2006). Other research suggests the PFP are developed and adapted as an outcome of the children's eating behaviours, and feeding practices often emerge in response to a child's individual characteristics, such as EF, or FF. A parent may use 'food to soothe' as a feeding practice to comfort a child, and this may be successful with a child with high levels of EF, however, may not work as well with a child with high levels of FF. The response of the child in the situation may lead the parent to choose or adapt their feeding practices to work with the behaviour of the child. This cross-sectional research may suggest the relationship of PFP and child eating behaviours is likely to be bidirectional in nature, as children respond to their parents feeding practices, and likewise, parents respond to their children's eating behaviours (Harris et al. 2016; Jansen et al., 2018). Harris and colleagues (2016) support this by discussing a child-responsive feeding model, as parents were suggested to adapt their feeding practices in response to the child's eating behaviour. Using participants from the Gemini twin study (n = 2026), they found parents adjusted their feeding practices according to the perceptions of their toddlers eating behaviours, with PTE ($t(273) = -6.70$, $p<.001$) and UFAR ($t(273) = -2.58$, $p=.010$) used more with the fussier toddler in comparison to the less fussy twin. Jansen and colleagues (2018) support this, conducting a longitudinal study to explore maternal feeding practices and children's eating behaviours, finding bidirectional associations of such feeding practices as restriction on children's food responsiveness at both 2 years ($r=0.27$, $p<0.05$) and 3.7 years ($r=0.14$, $p<0.05$). Although the results of this study are purely from self-report data which is open to reporting bias, it helps to uncover the relationships between PFP and children's eating behaviours, with suggestions that parents may adapt their feeding to match their children's needs, and children's eating adapts with their parents practices. The thesis is will now discuss each of the PFP in more detail, in addition to their association or relationships with children's eating behaviours within the literature.

1.3.1.1. Restriction

Restriction is a parental feeding practice involved in restricting a child's intake of certain foods, usually ones of high sugar or fat content. Practices such as overt restriction of children's food intake may be used to attempt to reduce food intake for health or weight purposes, however may in fact unintentionally promote childhood obesity. Restriction has been suggested to promote childhood weight status, by inhibiting the development of their own self-regulatory and control processes in appetite regulation, teaching children to focus on external cues and less on internal hunger and satiety levels (Birch et al. 2003). Due to the restriction of these foods, it is suggested that the appeal of the banned food is heightened and thus when a child has free access to them, eating in the absence of hunger, or EOE takes place. This is supported by a four year longitudinal study (Francis & Birch 2005) which found restrictive feeding practices were associated with a child's increase in eating in the absence of hunger (EAH) over the 4 year period ($r=0.37$, $p<0.05$), which in turn was associated with a greater child BMI change over time ($r=0.29$, $p<0.05$). Although the study was conducted with self-report questionnaires which may be subject to reporting bias, it gives insight into the relationship between restrictive feeding practices, EAH and child weight status. What also must be noted, is Francis and Birch (2005) only found these results in mothers with overweight, with these relationships were non-significant for healthy weight mothers. Due to previous research indicating that a child is more likely to be obese with one or more parent with obesity (section 1.1.3), it may be that the parent with obesity is restricting the child's diet due to perceptions of their own thoughts regarding their own weight status. This would be further supported by a cross-sectional study by Webber and colleagues (2010a) who found a positive relationship in restriction and child BMI SD ($n=213$; $r=0.16$, $p<0.05$). Interestingly, when maternal concern was added to the regression model, the relationship between child BMI SD and 'restriction' became nonsignificant (b.0.04,

P.=0.44), but concern remained a significant predictor (b.0.30, P<0.001), suggesting parents may use restrictive feeding practices in as a consequence of their concern of their child's weight status. Other cross-sectional studies support this finding reporting that parents concerned with their child's weight status are more likely to report using restrictive feeding practices with their children (Crouch et al. 2007; Gregory et al. 2010b).

Research focusing mainly on restrictive feeding practices and EOE, a cross-sectional study by Haycraft and Blissett (2012) found maternal restriction was positively correlated with children's EOE (r=.385, p<0.001), however they did not find a significant result with fathers. Paternal use of restrictive feeding practices instead found an associated with SE (r=.287, p<0.05), a food avoidant behaviour normally associated with EUE. They suggested SE maybe due to the mealtime being more controlled, less enjoyable or less palatable leading to a reduction in eating speed. With causality unable to be established in this study, further longitudinal studies have begun to unpick the relationship further. Tschann and colleagues (2015) conducted a 2 year longitudinal study (n = 322) finding both mothers and fathers restriction of food predicted higher weight status in both girls and boys 1 year later. Furthermore, they highlight a potential bidirectional relationship with restriction, with boys showing a higher weight status at baseline predicting mothers use of restrictive feeding practices 1 year later (β = 0.19, p<0.05). Findings from these studies strengthen the understanding of the relationship between restrictive feeding practices, parental concern, child's weight status, and EOE behaviours, however it would be beneficial to explore these factors together in a multivariate model, to explore the interplay between them.

1.3.1.2. Pressure to Eat

PTE is defined as a parent's attempt to control the food the child eats, mostly via pressuring the child to consume more of certain foods at mealtimes (Musher-Eizenman

& Holub 2007). This pressure does not exclusively involve verbal encouragement to eat more, but may also involve physical cues and prompts. Numerous cross-sectional studies have found pressuring the child to consume healthy foods have been associated with food avoidant eating behaviours in children in, such as picky eating, food fussiness and slowness in eating (Gregory et al. 2010; Powell, Farrow and Meyer 2011; Haycraft & Blissett 2012; Morrison et al. 2013; Harris et al. 2016). Powell, Farrow and Meyer (2011) for example examined a range of PFP and eating behaviours in young children. They found mothers who reported using PTE with their children also reported higher levels of children's eating behaviours such as FF ($r=.21$, $p<0.05$), slowness in eating ($r=.22$, $p<0.05$), satiety responsiveness ($r=.24$, $p<0.05$) and EUE ($r=.36$, $p<0.01$). This study suggests that the use of PTE is associated with such food avoidant behaviours such as EUE children, and that children with EUE are normally displaying other food avoidant behaviours.

Having already discussed how EUE is associated with a lower weight status in children (section 1.2.1.2), recent cross-sectional studies have found a relationship with PTE and dietary restraint, reduced intake of the pressured foods, and lower weight status in early childhood (Powers et al. 2006; Gregory et al. 2010; Haycraft & Blissett, 2008). All of these cross-sectional studies found a negative relationship between PTE and child weight status with $r=-0.16$, $p<0.01$ (Powers et al., 2006), $r=-0.17$, $p<0.05$ (Gregory et al., 2010), and $r=-0.270$, $p<0.01$ (Haycraft & Blissett, 2008). These studies, due to their cross-sectional cannot infer directionality. A laboratory based study however supports these findings, as Galloway and colleagues (2006) found when children were pressured to eat soup, children made more negative comments about the soup, consumed less, and subsequently had decreased preference for soup. In addition, children whose parents reported higher levels of use of PTE at home had significantly lower BMI percentile scores ($r=0.48$, $p<0.05$).

1.3.1.3. Instrumental Feeding / Use of Food as a Reward

Instrumental feeding, which subsumes the feeding practice of use of food as a reward (UFAR), uses a non-nutritive approach to providing children with food for a non-hunger basis. Providing food for such reasons as rewarding a child for completing a particular task, eating all their dinner to receive pudding, giving the child ice cream to cheer them up, or providing a biscuit for being good at nursery, may teach them to use food in a non-nutritive way to make them feel happy (Kiefner-Burmeister et al. 2014). Using food as a reward for finishing dinner can be detrimental to the child in a number of ways, leading to EOE behaviours. Firstly, by providing the reward of pudding for finishing their dinner, the child may learn to ignore internal cues of satiety and overeat to finish their meal to receive the reward. A cross-sectional study explored the use of reward to either eat or behave and its' association with EOE (Roberts et al., 2018), and found that food-based incentives to eat and food-based incentives to behave were both significantly positively associated with children's EOE outcomes with $r=0.47$, $p<0.05$, and $r=0.35$, $p<0.05$ respectively. Therefore, a parent using UFAR may encourage EOE in children, but similarly, a child who shows EOE may be more susceptible to food based rewards, leading a parent to use UFAR. In addition to this, studies discuss issues regarding 'asking children to eat a target food' they that may have liked previously. Asking a child to eat such food as broccoli, which they may have enjoyed before, and pairing it with a reward such as chocolate once it's eaten, may create a devaluation of the target food as well as increasing the liking for the reward food (Vollmer, 2018; Farrow & Haycraft, 2019). This may suggest that using such practices as rewarding eating with eating, not only reduces the likelihood that the child will want to eat the target food again without the reward based item, but prevents the child using their own internal satiety levels, and encourages overeating past the point of satiety.

In addition to child overeating behaviours, UFAR may impact the child's healthy emotion regulation skills, leading them to turn to food in happy or difficult life events, mis-addressing their feelings with hunger. This regulation of intake has been researched by Powell, Frankel and Hernandez (2017) within a cross-sectional design, measuring parental use of UFAR, children's self-regulation of eating and children's EOE. They found a strong positive relationship between parental UFAR and child EOE ($b=0.54$, $p<0.001$). When adding children's self-regulation of eating as a variable, the relationship was partially mediated by the child's self-regulation in eating, but still highly significant, even after controlling for parent and child demographics. This suggests that a child's ability to regulate their own eating behaviours would be a protective factor in the relationship between UFAR and EOE, although as it is only a partial mediation, suggesting other factors may be at play. It would be interesting therefore to conduct a study with more parent and child emotion regulation variables in a multi-faceted analysis to see the potential within this relationship.

This feeding practice however does show mixed results within current research, with one cross-sectional study ($n=104$) finding a relationship between parental UFAR and EUE ($r=0.28$, $p<0.01$; Powell et al. 2011). It may suggest this feeding practice may unintentionally reinforce FF and other food avoidant behaviours, such as EUE. However, it is just as likely that the children's EUE reinforces the parents to use UFAR as a way to promote food intake by their fussy or undereating child. Another cross-sectional study reinforced this idea, finding UFAR predicted lower intake of fruit and vegetables in 2 to 6 year old children at risk of overweight ($B= -0.255$, $p<0.03$; Kroller & Warschburger 2008).

Roberts and colleagues (2018) discussed the differing kinds of parental reward practices and the terminology challenges in the literature. Parents use rewards with children to encourage healthy eating behaviours, or prevent unhealthy behaviours. This can cause confusion in the literature as researchers interchangeably study parents' use of rewards

for behaviour, whether it be a food reward (chocolate) or non-based food reward (stickers), for a successful eating behaviour such as eating all their vegetables, or a non-eating behaviour such as doing well at gymnastics. Two randomised control trials have in fact found that using non-food based rewards such as stickers (Corsini et al., 2013; Remington et al., 2012) has shown to instead increase the preference and even intake for the target food. Both of these randomised control trials show a moderate sample size with and 185 and 173 children respectively, and both conclude that the use of non-food as reward (stickers) increased healthy food intake more than the control groups with significant group by time interaction of vegetable liking of $F[6,399] = 3.29$, $p = 0.004$ (Corsini et al., 2013) and $F[1,134] = 3.62$, $p=0.029$ (Remington et al., 2012). This suggests that using non-food based rewards for eating or behaviour may have a different impact on a child's eating behaviour in comparison to food based rewards, although these are not well examined and distinguished at times within the literature.

1.3.1.4. Emotional Feeding Practices / Use of Food for Emotion regulation

Emotional Feeding is the tendency to use food to soothe and distract from negative emotions, or to regulate the child's emotional states (Wardle et al. 2002; Musher-Eizenman et al. 2007). Emotional feeding within the literature has received considerable attention regarding its relationship and potential contributor to EE behaviours in childhood (Braden et al. 2014; Tan & Holub 2015). Both of these cross-sectional studies highlight a significant positive relationship between using food to regulate emotions and EOE ($B=0.40$, $p>0.001$; Braden et al., 2014; and $B=0.35$, $p<0.01$; Tan & Holub, 2015). After controlling for age and sex of the child, parental emotional feeding practices remained the strongest predictor of EE behaviours in children between 8 and 12 years old (Braden et al. 2014). A laboratory based study by Blissett, Haycraft and Farrow (2010) supported these findings, suggesting that emotional feeding, or UFER teaches children to use food to regulate their own emotions. They found that children whose

parents who use UFER at home consumed more food in the absence of hunger, regardless of the experimental and mood manipulation group they were part of ($F[1,23] = 11.29$, $p = 0.003$). It is suggested that by feeding their children for emotion regulation, parents undermine the child's natural ability to regulate their own eating, thus creating eating in the absence of hunger (Steinbekk et al. 2018). This has been noted in a longitudinal study (n=323, Rodgers et al., 2013) whereby maternal emotional feeding predicted increases in EOE, over the course of 12 months in preschool aged children ($r=0.35$, $p<0.001$). More recently, a large six year longitudinal study (n=801, Steinbekk et al. 2018) found whilst controlling for initial levels of feeding practice, child eating behaviours and BMI, emotional feeding behaviours at the age of six predicted higher EOE and ages of eight ($r=0.40$, $p<0.001$) and ten ($r=0.34$, $p<0.001$) years old. Inferring results from longitudinal data has more weighting within the hierarchy of evidence (Guyatt et al., 1995), as one can establish temporal precedence, however all data was collated via parental self-report, which may increase the risk of respondent bias.

Emotional feeding, in addition to being a variable in its own right, has also been shown to act as a mediator between EOE behaviours of both Parent and Child. Two cross-sectional studies support the idea that emotional feeding practices mediate the relationship between maternal and child EOE. Rodgers (2014) found a significant positive relationship between maternal and child EOE (n=306; $r=0.24$, $p<0.001$), and that emotional feeding practices partially mediated the relationship ($b=0.14$, $p<0.01$). Tan and Holub (2015) also found a strong positive relationship between parent and child EOE (n=95; $r=0.23$, $p<0.05$), however emotional feeding fully mediated the relationship between EOE behaviours ($b=0.09$, $p>0.05$). This may suggest that parents who engage in EOE behaviours themselves may be more likely to use emotional feeding strategies and encourage EOE behaviours in their children.

1.3.1.5. Monitoring

Monitoring involves keeping track of the child's intake of foods, particularly ones high in fat, sugar or salt. Although classed as a controlling feeding practice, it is less intrusive than practices such as PTE or restriction and has been linked in longitudinal research to provide adaptive and beneficial eating outcomes and weight status in children (Rodgers et al. 2013; Faith et al., 2004). Both longitudinal studies found monitoring to be a more favourable feeding practice than other controlling feeding practices, with Rodgers and colleagues (2013) finding monitoring feeding practices predicted a significant reduction in EOE behaviours 1 year on ($r= -0.16$, $p<0.05$), and Faith and colleagues (2004) finding monitoring feeding practices negatively associated with child BMI z scores 2 years later ($r=-0.48$, $p=0.006$).

Applying this moderate level of control, by monitoring the unhealthy snack intake, is a healthy and functional strategy for parents to apply to manage children food intake appropriately. A cross-sectional study (n=96) by Haycraft and Blissett (2012) found that maternal use of monitoring was significantly negatively correlated with EOE in 2-5 year old children ($r=-0.357$, $p<0.05$). They also found paternal use of monitoring significantly negatively correlated with EUE behaviours (-0.397, $p<0.01$). As we have discussed (section 1.2.1) EUE and EOE are two of the few variables between food avoidant and food approach behaviours to positively correlate with each other, suggesting that monitoring have a protective relationship with maladaptive eating behaviours, although causality cannot be established.

1.3.1.6. Modelling

Parental modelling of behaviour is a non-directive feeding strategy used to influence a child's eating behaviours. Modelling as a feeding practice is a complex construct with parents displaying behaviours as a way for children to mirror the particular behaviour, being used in both intentional and unintentional methods (Russell et al., 2018). Intentionally, modelling can be used by displaying a particular preferential behaviour to increase the child's intake of a certain food, such as trying novel foods (Blissett et al. 2016). Unintentionally, modelling can also be seen as a parent serving as a role model simply by being present with the child during the feeding situation. Although modelling behaviour has been suggested to show positive outcomes, modelling can also show negative outcomes, such seeing a parent who openly discusses dislike for a food may in turn teach the child to not like the food also (Brown & Ogden 2004). On one hand, parents choosing healthy foods and portion sizes may teach children to follow healthful behaviours, however, if they are exposed to poor eating behaviours, they may learn these also.

Regarding parent modelling of EE, research has consistently shown that parents who emotional eat themselves have children who show EE behaviours. Snoek and colleagues (2007) conducted a large cross-sectional study (n=428) focusing on parental behavioural and psychological control on their children and EE. Lower perceived levels of maternal support and higher perceived levels of maternal psychological control were positively associated with EE behaviours. Moderate correlations were also found between adolescent EE and parental EE behaviours ($r=0.15$, $p<0.01$) suggesting it down to a modelling effect. This is in line with a previous study that reported moderate correlations in parental internal motivations to EE and adolescents internal motivations to EE ($r = 0.352$, $P<0.01$; Brown & Ogden, 2004). It may be beneficial to explore further the relationship between parent and child EE behaviours, as other parental and child factors related to emotionality in this context may further explain the modelling of these maladaptive eating behaviours.

1.3.1.7. Encouragement to Eat

Encouragement to eat, or Prompting to eat, with preschool aged children provides protective effect on development of maladaptive eating behaviours, and is related to a lower BMI in children (Sleddens et al. 2010, Musher-Eizenman et al. 2009, Zhang & McIntosh 2011). A cross-sectional study by Sleddens and colleagues (2010) measured the feeding practice encouragement to eat alongside snacking (unhealthy) and fruit (healthy) food consumption. They found a significant negative relationship between snacking and encouragement to eat ($r=-0.21$, $p<0.05$), and a significantly positive relationship between fruit consumption and encouragement to eat ($r=0.24$, $p<0.01$). This suggests that use of encouragement to eat is related to healthful eating behaviours, although causality cannot be established. Although the feeding practice encouragement to eat may be confused with the feeding practice PTE, it is actually different. Whereas PTE is associated with ensuring the child finishes everything on their plate, creating a negative association between emotions and the mealtime environment, encouragement to eat attempts to get children to try foods without the pressure of ensuring they consume it. Encouragement to eat would aim to encourage the child to eat a small amount if they refuse to eat, or to encourage them to try novel fruit or vegetables they may not have had before, without the need for pressure.

The feeding practice encouragement to eat has been associated with EF; a food approach behaviour (Steinsbekk et al. 2016). Rodgers and colleagues (2013) conducted a longitudinal study and found a negative association between encouragement to eat and EE, specifically overeating ($r=-0.13$, $p<0.10$) and significantly positive relationship between food approach behaviours both cross-sectionally ($r=0.27$, $p<0.001$) and prospectively 1 year later ($r=0.24$, $p<0.001$). As discussed previously (section 1.2), food approach behaviours such as EF are shown to positively correlate with other food

approach behaviours, such as EOE. With this is mind, a longitudinal study by Rodgers and colleagues (2013) found a significant positive relationship between 'encouragement to eat' and 'tendency to overeat' one year later ($r=0.15$, $p<0.05$). However, a cross-sectional study by Zhang and McIntosh (2011) instead found encouragement to eat, alongside other previously discussed studies, showed results of a lower weight status in children ($n=312$, $=-0.37$, $p<05$), discussing the possibility of a causal relationship between encouragement to eat and child's weight status. By controlling for child's weight as an independent variable, they conclude that child weight status has a significant impact on the PFP used, suggesting parents whose children have overweight are less likely to use encouragement, instead trying to build healthier eating habits. In contrary to previously discussed findings, a longitudinal study by Steinsbekk and colleagues (2016) found no association between encouragement to eat and EOE behaviours at time 1 (aged 6; $r=-0.01$, $p>0.05$) or 2 years later (aged 8; $r=-0.3$, $p>0.05$), suggesting that it may be the lack of 'pressure' on encouraging to eat, creating enjoyable and calm environment for children in which to try foods and listen to their own levels of internal satiety. This may be supported by their findings of a positive association between encouragement to eat and EF ($r=0.13$, $p<0.05$) suggesting the positive nature and the enjoyment of the feeding environment. It may be simply the case that a child who shows EF may not need to be encouraged to eat.

1.3.2. Parental Styles and Feeding Styles

Parenting styles are general behavioural constructs that focus on how an interaction between an emotional context of parents and children (Darling & Steinberg 1993). They describe how parents interact with their children, reflecting the broader emotional relationship and climate, such as the level of warmth, acceptance or control (Patrick et al. 2013). Parenting styles are characterised using two particular dimensions, demandingness and control (how much control parents use) and responsiveness and

nurturance (how much warmth and acceptance used in response to children's needs). In line with Baumrind's (1971) original discussion regarding general parenting styles, Hughes et al. (2005) defines the four parenting styles as; authoritative parenting, which is associated with a high level of demandingness and responsiveness to the child; authoritarian parenting associated with high demandingness but low responsiveness; indulgent parenting which combines a low level of demandingness and high level of responsiveness; and uninvolved parenting which is associated with both low levels of demandingness and responsiveness. The last two parenting styles, uninvolved and indulgent can also be termed 'permissive' parenting styles, defined as having low demandingness regarding the child.

In addition to parental styles, PFS are seen as a subcategory of parenting styles that are, instead of during the day, specific to the mealtime and feeding context (Hughes et al. 2005). It refers to the specific goal-directed behaviours that are used by parents directly, and therefore the same dimensions of demandingness and responsiveness are used, but applied within the feeding context. Figure 1 is adapted from Baumrind's (1971) and Maccoby and Martins (1983) Typology of Parenting Styles and explains the relationship of demandingness and responsiveness with the feeding environment.

		Demandingness / Control	
		High	Low
Responsiveness / Nurturance	High	Authoritaritative	Permissive / Indulgent
	Low	Authoritarian	Uninvolved / Neglectful

Figure 1: Typology of Parental Feeding Styles

Therefore definitions of Parental Feeding Styles (PFS), as explained by Shloim and colleagues (2015), are adapted from the typological approach to parenting, developed by Hughes and colleagues (2005). The authoritative feeding style was characterised by parental involvement, nurturance, reasoning, and structure (Hankey et al., 2016). It has high levels of both demandingness and responsiveness, with parents who encourage their child to eat via supportive and non-directive behaviours, with high nurturance and structure. The authoritarian feeding style included high levels of restrictive, punitive, rejecting and power-assertive behaviours in the feeding environment (Hankey et al., 2016). It has low levels of responsiveness and high levels of demandingness, with parents who encourage the child to eat, creating rule base demands regardless of the child's own personal preferences and needs. The indulgent feeding style was characterized by warmth and acceptance of child food preferences in conjunction with low levels of monitoring the child's eating behaviours and making few demands (Hankey et al., 2016). It has high levels of responsiveness and low levels of demandingness, with the few requests made to encourage eating being nondirective and supportive. The

uninvolved feeding style involved both low levels of control or involvement and low levels of warmth and acceptance of the child in the food environment (Hankey et al., 2016). It has low levels of both responsiveness and demandingness, with parents who make few demands on their child to eat, but any demands that are made they are unsupportive to the child.

Blissett (2011) discusses the difficulty in definitions and terminology relating to styles, with the same terminology defined in different ways. Both 'feeding style' and 'parenting style' use the same four labels; with parenting style related to the dimensions of warmth, responsiveness, demandingness, and degree of behavioural control exhibited, and Feeding Style the specific emotional climate within the certain feeding interaction. Therefore, whilst parenting style refers more to the broad parenting climate, PFS are more a specific subtype of parenting styles, with some characteristic feeding behaviours associated. This creates a challenge when discussing parenting styles and PFS across the literature, with differing terminology often used interchangeably and yet with potentially different meanings. Due to the challenges of clearly defining both parenting style and PFS in research, this thesis will focus on PFS rather than parenting styles as a broader concept, because a more precise relationship between PFS and PFP may be drawn within the literature.

1.3.3. Parent Affect in Feeding

Moving away from the direct PFS and practices that the parent may use, a further factor which may predict the use of feeding practices and styles is the parents emotional experience of mealtimes and feeding interactions with their children. It is important to consider the emotional climate, particularly how the parents feel in the feeding environment, and how the children react to the parental directives within the feeding context (Hughes et al. 2011). Frankel and colleagues (2015) created a measure of parent

affect within the feeding domain to help better understand the parent-child emotional feeding dynamic. Assessing this parent affect has shown that parent affect has an impact on parent-child interactions and general children's emotional well-being (Teti et al. 1995).

Research into parent affect in feeding is very limited, with some suggested associations between affect, feeding practices, and eating behaviours (Frankel et al., 2015). Positive parent affect in feeding has been linked to better child emotional outcomes including socioemotional competencies, whereas negative parent affect has been associated with more negative feeding and child outcomes (Martin, Clements & Crnic, 2002). This is supported by a large cross-sectional study (n=450; Topham et al., 2011) finding a significant negative relationship between parental affective responsiveness (expression of emotion and affection) and children's EE behaviours, specifically EOE ($r=-0.12$, $p<0.05$). Furthermore, Rodgers and colleagues (2014) found that aspects of maternal negative affect, for example depression, were significant positively associated with maternal ($r=0.44$, $p<0.001$) and child ($r=.13$, $p<0.05$) EE behaviours. Although both of these studies are cross-sectional and so unable to infer causality from the data, they are the first to explore maternal negative affect in such areas as EE. Other studies however have found mixed results, with Hafstad and colleagues (2013) conducting a longitudinal study over 3 years, and found measures of maternal negative affect in feeding at 18 months old, predicted food avoidant 'picky eating' behaviours between the ages between 30 to 54 months old ($r=0.086$, $p<0.05$).

1.4. Emotion Regulation

ER is defined as the 'efforts people undertake to influence the experience and expression of their own emotion' (Gross 1999). The ability to regulate one's own emotions is described by Gratz and Roemer (2004), with six individual skills involved in ER; identifying emotions, accurately labelling emotions, using strategies to regulate an

emotion, accepting an emotion, engaging in a goal-directed behaviour, and exhibit self-control whilst experiencing emotion. These skills are conceptualised as the ability to understand one's own emotion and be able to act in an appropriate way to, or inhibit a maladaptive action, to a negative emotion.

1.4.1. Emotion regulation and Eating Behaviours

A number of studies have highlighted emotion regulation within the development and management of particular maladaptive eating behaviours in adults. Gianini and colleagues (2013) found significant positive associations between limited access to emotional regulation strategies and EOE behaviours ($n=326$, $t=2.87$, $p<0.01$). To further this finding, a laboratory based study ($n=44$; Evers et al. 2010) found suppression of emotions led to more comfort eating behaviours $F(2, 41) = 2.87$, $p = .027$, $d = 0.75$.

Regarding emotion regulation and EE behaviours, the exact process by which an emotion affects an eating behaviour is still in question, however it has been suggested that it may not necessarily be the emotion itself that creates the change in eating behaviour, but instead how the emotion itself is dealt with by the individual (Wiser & Telch 1999). This review article suggests that before any emotional overeating behaviour occurs, individuals experience a negative emotion that they cannot properly regulate. Instead, depending on their inability to control and regulate their emotions may lean them towards a maladaptive strategy, to create immediate emotion regulation via overeating. This is an important area to consider as it suggests that the problem is not necessarily the experience of the negative emotion, either before the emotion has happened (cognitive reappraisal), or during the emotional situation (expressive suppression), but instead the lack of adaptive emotion regulation strategies available to the individual to regulate their negative affect (Evers et al. 2010).

1.4.2. Parental Emotion regulation

It is widely accepted that particular parental emotional behaviours can be modelled, replicated and mapped on to their children (Gouveia et al., 2019; Tan & Holub 2015). Regarding parents' ability to regulate their own emotions, parental expressiveness is a form of modelling that teaches children when it is or is not appropriate to express such emotions, and how to interpret particular emotional experiences (Dunsmore & Halbersladt 1997). A cross-sectional study by Bariola, Hughes and Gullone (2012) found that mothers' use of the emotion regulation strategy 'expressive suppression' predicted the same development of the strategy in their child ($r=0.21$, $p<0.01$). Although one cannot establish causality due to the cross-sectional nature of this research, the mirroring of emotion regulation between parent and child is suggested to be due to parents socialising their own emotion regulation both directly and indirectly within the family unit. Approaches are defined as parents actively teaching and coaching their child's emotion regulation techniques, such as children being taught about emotions and how one should respond in a given situation. Other approaches on the other hand are suggested when managing the demands of the family unit, with children learning by observing parents expression of their own emotions, and how parents regulate their own behaviour in these times (Meyer et al. 2014).

This idea is furthered by 'the tripartite model of parental and familial influence on child emotion regulation' (Morris et al 2007). This model discusses three distinct areas of parental contribution within the development of children's emotion regulation skills. Firstly, the child is suggested to learn about emotion regulation through observational learning, modelling and social referencing. This is suggested to be learnt at a young age via modelling responses and reactions to emotional situations, and as the child develops, an added verbal component to understanding emotions is introduced. Secondly, the child learns via parenting practices that are specifically related to management of emotion.

With this, parents may show differing levels of attention and affection toward the child, with more (positive) or less (negative) attention and affection in response to the child's current behaviour. Lastly, a child's emotion regulation is affected by the emotional climate of the family via the parenting style, the attachment relationship, family expressiveness and the marital relationship. A longitudinal study by Gallegos and colleagues (2017) found that growing up within household climates with low levels of supportiveness and collaboration, and high levels of parental and family conflict is associated with less adaptive emotion regulation in children ($r=-0.27$, $p<0.01$). Although this cross-sectional study cannot infer causality, one could argue that not only how parents deal with their own emotions may affect children's emotion regulation capabilities, but also how parents respond to their child's emotion. A narrative review by Thompson (2014) discusses how the association between parents' supportive constructive responses to the child's emotions helped to develop competent emotion regulation skills, and how children of parents who showed dismissive or punitive reactions showed less competent emotion regulation.

In addition to the mirroring of emotion regulation from parent to child; parents' emotion regulation, or lack thereof, is suggested to be a factor in the development of another emotional behaviour in children, EE. As discussed in section 1.3.1.4, when a child is upset or in distress, parents who then have difficulty in regulating their own emotions may use of emotional feeding practices, such as 'use of food to soothe' or UFER, similar to how they would regulate their own emotion (Tan & Holub 2015). Parents' own EE behaviours (PEE) and UFER feeding practices was examined in a cross-sectional study by Tan and Holub (2015), who found that PEE and UFER were significantly positively related ($r=0.28$, $p<0.05$). Although the cross-sectional design infers causality, it could be suggested that parents themselves who emotionally overeat, use more emotion regulation feeding practices with their children than parents who are not themselves emotional eaters (Wardle et al. 2002). This is because parents who emotionally overeat

may believe that using foods to cope with emotionality is effective, and so they engage in more regulation feeding practices with their children. It may be the case that parents who use emotion regulation feeding practices lack other and more adaptive ways to respond to their children's emotions (Tan & Holub 2015).

As discussed in section 1.3.1.4, the use of these emotional feeding practices may decrease the child's own ability to self-regulate their own emotion, and instead turn to food as a way to reach equilibrium, suggested in two cross-sectional studies (Bost et al., 2014; Sleddens et al., 2010). Firstly, Sleddens and colleagues (2010) measured dimensions of emotional feeding and children's consumptions behaviours, finding that UFER was significantly positively associated with children's snacking behaviours ($r=0.25$, $p<0.01$). Five years later, Bost and colleagues (2014) conducted a large study ($n=497$) measuring the caregiver feeding practices and food consumption of 2.5 to 3.5 year old child, and also found a significant positive relationship between UFER and child's consumption of unhealthy food ($r=0.20$, $p<0.001$). It must be noted that the UFER was not related to the consumption of fruit and vegetables ($r=-0.07$, $p>0.05$) and so suggests that it is not just the consumption of food, but the consumption of unhealthy snacks. This insight into parenting practice and food consumption was mirrored in a laboratory based study previously discussed in section 1.3.1.4 whereby Blissett, Haycraft and Farrow (2010) induced a negative state within an experimental setting, and found preschoolers whose parents reported using food for emotion regulation purposes consumed significantly more in the absence of hunger ($F[1,23] = 11.29$, $p = 0.003$). It could be suggested that children whose parents use food to regulate their child's emotions, could learn to associate food with pleasure, potentially leading to an increased reliance on food as an emotion regulation strategy instead of nutritional purposes. This may teach the child in times of distress to rely on external cues of when and what to eat, turning to food to regulate their emotions and may create or develop children's EE behaviours. The cross-sectional study previously discussed by Tan and Holub (2015)

found that parents UFER mediated the association between PEE and CEE, but only when the child's own emotion regulation skills were low (b=.06, p<.05), but not when the child's emotion regulation was high (b=.01, p>.05). This suggests that children's own ability to emotionally self-regulate may be a protective factor in the development of EE behaviours, even when their parents use food for emotion regulation purposes.

Parents' own ability to emotionally regulate is therefore an important area to consider in the development of emotion regulation in children. Parents with limited access to emotional regulation strategies were unable to correctly regulate their emotions, this may lead to emotional feeding practices. The relationship of these, in addition to the child's own ability to regulate their own emotions would be interesting to explore within a multi-dimensional approach. Controlling for these variables would help to explore the relationship between parent and child emotionality, as well as their EE behaviours.

1.4.3. Child Emotion regulation

Children's emotion regulation in eating is defined as the 'ability for one to eat or not eat in response to cues of hunger and satiety' (Vohs & Baumeister 2016). The development of child emotion regulation is important for many aspects of a child's social learning, health and wellbeing; including their ability to deal with negative feelings such frustration, and express emotions in a socially acceptable manner (Bridges & Grolnick 1995). As discussed in a review article, children with high levels of emotion regulation, the ability to regulate their own emotions, have been shown to interact better with other peers; whereas low levels of emotion regulation, the inability to regulate their own emotions, have been associated with higher levels of externalizing behaviours (Frankel et al. 2012).

As previously discussed (section 1.4.2), a strong body of evidence supports the findings that parents play an important role in the development of a child's regulation of emotions,

especially within the early years (Morris et al. 2007). Frankel and colleagues (2012) describe how in the first few months of life, an infant lacks control over their own arousal and is instead regulated by their own biological needs and how the parents respond to these. If the infant is upset, the response of crying would alert the parent to soothe the child to re-regulate their emotion. As children develop into the preschool era, the ability to regulate emotions in a social situation becomes more apparent and more controlled by the child internally (Carlson & Wang 2007). A classic observational study by Saarni (1984) termed the 'disappointment paradigm' tested the child's ability to regulate their own emotions, by receiving an unwanted gift. Children (n=45) were put into a situation of emotional conflict, with the need to express gratitude for the given present, but having the feeling of genuine disappointment as a result of the gift being undesired. The paradigm is suggested to help gauge a child's development of emotion regulatory abilities, with children by three to four years old beginning to show evidence of emotion regulation (Cole 1986; Kieras et al 2005).

Recent research demonstrates that, children's own emotion regulation plays an important role in the development of maladaptive eating behaviours linking to childhood obesity (Tan & Holub, 2015). The 'affect regulation' model suggests that is it not in fact the level or frequency of the negative emotion one feels, but instead the lack of the ability to regulate the emotion that leads to the maladaptive coping such as turning to food (Spoor et al. 2007). Children's self-regulation of energy intake is therefore important in many aspects, with longitudinal research showing children with overweight have been found to show deficits in their self-regulation regarding energy intake and higher levels of maladaptive eating behaviours. Harrist and colleagues (2013) found that regression of self-regulatory abilities predicted EE behaviours between second and grade ($R2=0.9$, $p<0.0001$). It must be noted however that the majority of the children's studies focus on the ability to regulate emotions and eating behaviours with children around 7 to 13 years of age. Research may focus on this age group due to the children's ability to complete

questionnaires, discuss their own behaviours and have autonomy over their own food intake. This is supported by studies focusing on emotion regulation and maladaptive eating behaviours in preschool children. Hughes and colleagues (2015) conducted a laboratory study (n=187) assessing child emotion regulation and weight status, finding child's self-regulation in eating was associated with child BMIz ($r=0.20$, $p<0.01$). This area of child's emotion regulation is therefore an important area to consider, as children's ability to regulate their own emotions during their eating experience may be a factor in parents' use of emotional feeding practices, which may lead to the development of EE behaviours.

1.5. Child Temperament

The development of emotional regulatory behaviours is suggested to differ not only due to the environment and the parental use of regulation behaviours, but also via the child's individual characteristics within their personality and character. These individual differences are suggested to be a function of a combination of the child's context and environment, the relationship with primary caregivers, and personal characteristics such as temperament (Santucci et al. 2007). Child temperament refers to biologically based, relatively stable patterns of emotional behaviours and regulation that can be observed from birth, with individual differences in reactivity and self-regulatory abilities, influenced over time by heredity and experience (Rothbart & Bates 1998; Rothbart 2011). It is noted the difference between temperament and character. Cloninger and colleagues (1993) distinguished character and temperament, with temperament referring to the moderately heritable and stable emotional responses mediated by neurotransmitter functioning, whereas character refers to the self-concepts and individual differences in values and goals that develop through the child's own experiences.

Studies measuring child temperament suggest it can be broken down into three main factors; Negative Affectivity, Extraversion and Surgency, and Effortful Control (Rothbart et al. 2001). Firstly, negative affectivity is a predisposition to experiencing negative affective states, defined by high positive loadings for sadness, fear, anger and frustration, and discomfort; and negative loadings for falling reactivity and soothability; falling reactivity being Rate of recovery from peak distress, excitement, or general arousal; and soothability being the Reduction of fussing, crying, or distress when soothing techniques are used by the caregiver. Secondly, surgency and extraversion is the tendency to perform impulsive and active behaviour, characterised by high positive loadings on the impulsivity, high intensity pleasure, and activity level scales, and strong negative loadings on the shyness scale. Lastly, effortful control is the ability to control attentional processes and behaviour, with high positive loadings for inhibitory control, attentional control, low intensity pleasure, and perceptual sensitivity scales (Rothbart et al. 2001; Putnam & Rothbart 2006; Sleddens et al. 2013). It is suggested to be related to the self-regulation of emotional reactivity and behaviours, allowing children with high levels of effortful control to have increased control over actions, and adjust to situation demands in a flexible manner (Rueda & Cómbita, 2012). The terms high and low intensity pleasure are differentiated as; high intensity pleasure being Pleasure or enjoyment related to high stimulus intensity, rate, complexity, novelty, and incongruity; and low intensity pleasure being Amount of pleasure or enjoyment related to low stimulus intensity, rate, complexity, novelty and incongruity (Gartstein & Rothbart, 2003).

Research over the last decade has focused on the individual factors of child temperament, with cross-sectional (Haycraft et al 2011; Tate et al 2016; Messerli-Burgy et al. 2018) and longitudinal studies (Vollrath et al 2012; Hafstad et al. 2013; Bergmeier et al 2014a) looking at the role of child temperament in food approach and avoidant eating behaviours, and BMI or weight status. Tate and colleagues (2016) found the food approach eating behaviour EOE, increased the risk of having overweight in children with

'difficult' temperaments, but decreased the risk for children with an 'easy' temperament. Tests of interaction indicated that child weight status differed between children with easy temperament or difficult temperament for EE behaviours. The risk of overweight in children was higher (0.48, $p<0.05$) for high EE compared to low EE. Among easy temperament children, the risk of overweight was lower (-0.11, $p<0.05$) for EE compared to low EE. This finding supported the view that certain environmental contexts may affect children with a difficult temperament over easy temperament, with difficult temperament children more likely to respond to an emotional situation with less self-regulatory abilities, leading to maladaptive ways to deal with said emotion, such as EOE. Conversely, two cross-sectional studies (Bergmeier et al., 2014a; Haycraft et al., 2011) instead found no relationship with child temperament and BMI, although both studies reported the majority of their child sample were of a healthy weight, suggesting that links between temperament and eating behaviours may be more pronounced in children who have either under or overweight. Whilst finding no relationship with BMI and temperament, both studies instead found children with a heightened emotional temperament displayed more food avoidant behaviours such as picky eating or FF *b=.35, p<.01* (Bergmeier et al., 2014*).* Haycraft and colleagues (2011) also found child emotionality, a category within child temperament, although related to less enjoyment of food ($r=-0.291$, $p<0.001$) and greater fussy eating ($r=0.250$, $p<0.001$), was also associated with both EUE ($r=0.250$, $p<0.001$) and EOE ($r=0.156$, $p<0.001$) behaviours.

With previous studies by Blissett, Haycraft and Farrow (2010) finding the parental use of food to regulate a child's emotional state was linked to EOE behaviours (section 1.3.1.4), they suggest an interactive model for the development of EE behaviours; where a child's temperament may itself elicit the parental UFER. Therefore, as well as a parent reacting in a given situation affecting the child's temperament and eating behaviours, it could therefore be suggested that a child's temperament may also play a role within their own emotion regulation, and the way the parent thus reacts in that given situation. This idea

of an interactive model is developing in other research, with a suggestion of a mediating effect of child temperament on PFP, emotional feeding, and the eating environment. Powell and colleagues (2011) found mothers (n=104) who reported higher levels of emotional child temperament also reported child food avoidant behaviours such as FF ($r=0.33$, $p<0.01$), slowness in eating ($r=0.27$, $p<0.01$) and satiety responsiveness ($r=0.30$, $p<0.01$). Although being a cross-sectional study causality cannot be established, it is still interesting to consider the potential relationship between PFP, child temperament and eating behaviours. The hypothetical relationship that could be drawn from all these factors could suggest a multi-directional model regarding the development of these maladaptive behaviours in children.

This idea of a bidirectional or multidirectional approach in parents feeding and child temperament is further supported, as parents themselves are suggested to react differently to children with difficult temperament within the feeding environment. This is discussed in a cross-sectional study (Hughes et al., 2012) as parents with children of a difficult temperament (high in negative affectivity) also show parental negative affect ($r=0.29$, $p<0.05$), suggesting the negative emotional environment is shared between parent and child. One must be mindful with the cross-sectional data in establishing a causality, as it is feasible to suggest that the parents negative affect leads to the child's difficult temperament, similar to the child's difficult temperament leading to a negative affect in the parent. Nonetheless it discussed how temperament itself plays an important role with the relationship between parent and child. A systematic review by Bergmeier et al (2014b) found links between PFS and PFP with differing traits of child temperament. They found that parents who rated their child as experiencing less negative affectivity use more indulgent PFS (Hughes et al. 2008), and mothers who rated their child as having a difficult temperament were more likely to use feeding practices such as use of food to calm (McMeekin et al. 2013). Use of food in response to a child's temperament

may inadvertently condition the child to emotionally react in order to gain the desirable food, thus perpetuating the cycle (Bergmeier et al. 2014b).

1.6. Summary and Thesis Aims

With obesity one of the most serious public health challenges of the 21st century, it is fundamentally important that research is conducted into the development of healthful behaviours that may reduce obesity growth and help support positive and healthy relationships with food and eating behaviours. During infancy to preschool years, parents and primary caregivers are one of the main influences in children's food choices, and the main provider of food. Thus, PFS and PFP from these main caregivers may uncover underlying reasons as to why children are developing EE behaviours.

It has been discussed that there is a multi-faceted and complex aetiology within the development of childhood EE behaviours, both within the food approach behaviour of EOE, and food avoidant behaviour of EUE. Research evidentially shows that EE behaviours develop in childhood, however more research is needed to understand their development within these early years, and the role of the parent and child's individual characteristics within this. With each of these parental and child factors explored playing a role within the development of maladaptive eating behaviours, considering how they may affect the development of these behaviours when combined may benefit the research into childhood obesity. Research has so far mostly focused on the individual aspects of parental styles, feeding practices, parental behaviours, emotion regulation, and child temperament. No research to date has explored the combination of these characteristics in the context of predicting preschool children's EE.

1.6.1. Aims and Objectives

The principle aim of this thesis is:

To explore and investigate the role of parent emotion regulation and feeding practices in preschool aged children's emotional eating.

In particular, it involves the exploration of the relationship of parental and child emotionality, termed 'ER' and 'temperament' on the use of PFP and the development of preschool child's EE.

1.6.1.1. Research Objectives

Achieving the overall aim of the thesis, involved three main research objectives.

The first objective relates to the exploration of previous research focusing on the main PFS and practices that have been suggested in the literature to be associated with a prevalence of EE behaviours in preschool aged children. This was conducted via a systematic search of the databases, a systematic literature review and meta-analysis of the findings; systematically reviewing previously published studies focusing on the relationship between PFS and practices on preschool aged children's EE behaviours. This sought to identify which PFS or PFP have been previously discussed in the literature to have an association with children's EE behaviours.

The second and third research objectives were to explore the relationships between parents and children's emotionality, PFP and children's eating behaviours, specifically EOE and EUE. This was achieved via two research avenues of both a quantitative and qualitative nature. Firstly, the relationship was explored using a quantitative cross-sectional path analysis, uncovering the relationship between parental affect in feeding, parental ER and eating, parents feeding practices, and children's temperament on the development of children's EE behaviours. The final research objective sought to explore and illuminate the parent's own experiences within their children's EE behaviours. Table 1 provides a summary of the research objectives and the methods used to achieve them.

Table 1: Research Objectives

	Research Objectives	Methods
(i)	**To systematically review the Parental feeding styles and Parental Feeding Practices associated with emotional eating in preschool aged children.**	(1) Systematic Review using 5 databases; CINAHL, PsycInfo, Medline, Scopus and, (2) a review of the literature, (3) a meta-analysis of the literature.
(ii)	**To examine the role of Parent's and Child's Emotionality, through emotion regulation and temperament, and its relationship with parental feeding practices and Preschool Aged Children's Emotional Eating.**	(1) A systematic review and meta-analysis of the literature, (2) Cross-sectional study using path analysis of the variables; parent emotion regulation, parent affect in feeding, parental feeding practices, parent emotional eating, child's temperament and children's eating behaviours – specifically emotional overeating and undereating.
(iii)	**To explore parent's own experiences regarding feeding and emotions associated with emotional eating in their preschool children.**	(1) Use of the COM-B Model to develop the interview schedule, (2) Semi-structured interviews with parents, (3) Thematic analysis of the findings.

The aim of this thesis is to therefore to investigate and explore parental and child characteristics and their role within the development of EE in preschool children. It is clear that there is a paucity of research that attempts to understand the development of EE behaviours within a multi-faceted model of parental and childhood characteristics.

2. Methodology

This chapter provides an overview of the methodology, drawing on quantitative, qualitative and systematic review methods, including a rationale for methods chosen. The three studies and findings are presented in subsequent chapters.

2.1. Research Design

Previous research addressing PFP, behaviours and the development of EE behaviours have employed multiple designs and methodologies. As highlighted with the background and introduction to the thesis (chapter 1), many studies focusing on EE in preschool aged children have been limited by their small sample and thus inability to generalise to the general population. In order to overcome this limitation of those studies the present thesis utilises, in addition to a systematic review and meta-analysis of previous literature, a large sample cross-sectional study to be more generalisable to the population. It is understood that, as with many studies discussed in the introduction, cross-sectional design does not allow to causality to be established and hence conclusions drawn solely from them are done so with caution. Cross-sectional studies, however, are useful for identifying potential initial factors that may be associated with the outcome of interest and represent an exploratory and necessary step in the research process (Rindfleisch et al., 2008). Alongside the cross-sectional study the thesis also conducts an interview-based study to add context and illuminate the findings from the cross-sectional study. These three methodologies will now be further discussed.

2.1.1. Systematic reviews and Meta-Analysis

Systematic reviews and meta-analysis are at the top of the 'evidence hierarchy' when assessing findings of studies and research. By collating data from other studies, they provide an excellent way to synthesis and review studies, articles and information in a systematic way. They separate themselves from such reviews as narrative or opinion pieces by being based on a clearly formulate question and identifying relevant studies in a structured and replica way. The screening of the findings using the search terms, as well as the appraisal of their quality and methodology distinguishes them from traditional reviews and commentaries (Askie & Offringa, 2015; Khan et al., 2003). Figure 2 is adapted from Cochrane (2015) 'What Authors do in Systematic reviews'

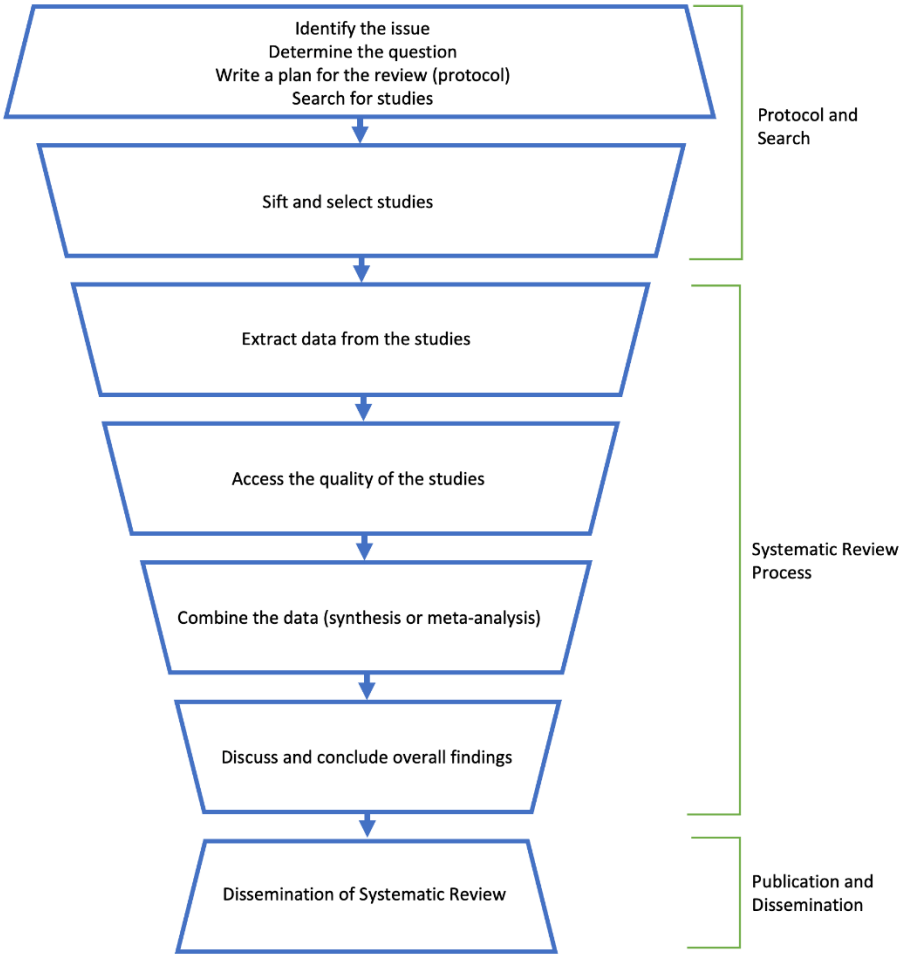

Figure 2: The Concept of a Systematic Review

Systematic reviews use a methodological approach whereby the question is formulated, the eligible studies are then identified and appraised, and the findings are combined, whether in narrative or mathematically in a meta-analysis. The combination and summary of the findings are then used to state the direction or conclusion within the literature, draw conclusions about the implications for future practices and research (Clarke, 2016). Systematic reviews allow all evidence to be searched and used that meets the researchers question criteria and conducts a formal assessment within the review of quality and risk of bias from the studies. It enables appropriate synthesis of data using standardised measures, allowing for a high level of interpretation of results and conclusions.

Systematic reviews, although high in hierarchy of evidence, are only as good as the studies it contains. For example, a systematic review of RCTs will provide definitive evidence of causality/proof where as a systematic review of cross-sectional studies can never provide more than an association. Nonetheless they give excellent insight and a methodological approach to a review and synthesising previous studies and findings within a standardised methodology. Systematic reviews however do have a number of limitations within the research field; they are time consuming for the researcher, and may still be subject to potential risk of bias or misinterpretation of the subgroup analyses (Askie & Offringa, 2015).

Due to the challenges (discussed previously in section 1.3.2) regarding amalgamation of data and findings surrounding PFS and feeding practices, the decision was made to conduct a systematic review of studies from 1990 to present day. This is discussed further in Section 3.3.1.

2.1.2. Cross-sectional Studies

Cross-sectional studies, as previously highlighted, are useful for identifying a 'snapshot' of the here and now in the research area of interest. They allow research to explore and discover relationships between variables, and although causality or directionality cannot be established, the relationship can still be discussed (Rindfleisch et al., 2008).

Cross-sectional studies come under the umbrella of non-experimental studies. Whereas experimental studies depend on the manipulation or control of one of more variables to measure the effect of this change, non-experimental studies measure the variables unchanged by the researcher with no invention variable within the study (Scheines, 2005). Experimental research is used within a small number of studies within the context of EE, with researchers changing a particular variable in the experimental group and measuring the outcome in the control group (Blissett et al., 2010; Farrow et al., 2015). The challenges within experimental studies is the difficulty in recruiting sufficient sample sizes, and is thus less generalisable to the normal population. Figure 3 compares and contrasts experimental versus non-experimental methods.

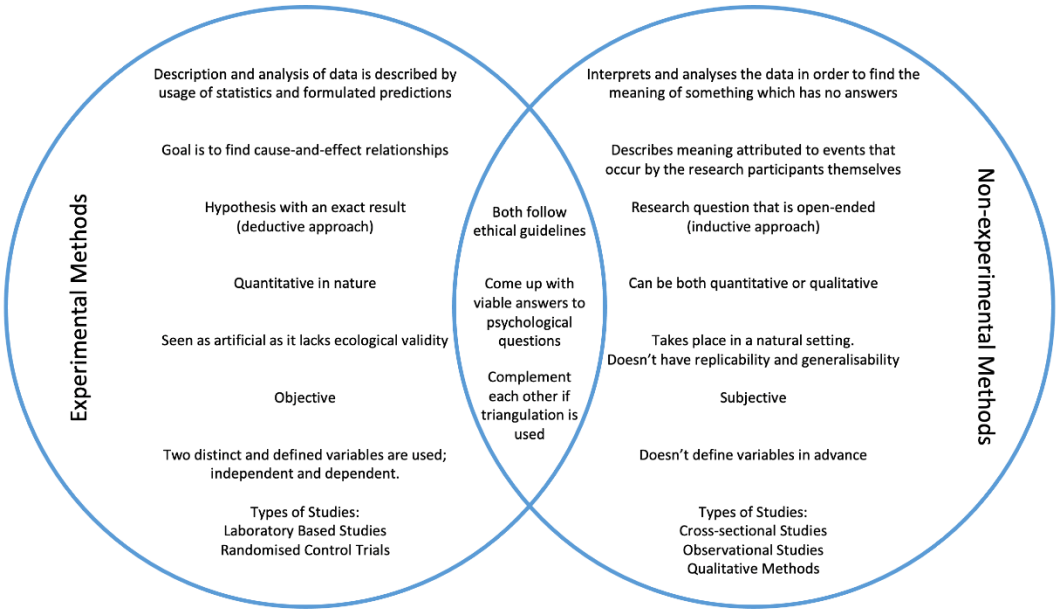

Figure 3: Comparison of Experimental and Non-Experimental Methods

With cross-sectional studies, the availability of participants creates the possibility of a much larger cohort and thus the exploration of the variables of interest and their interactions. This non-experimental design enables the researcher to investigate the relationships between variables that are happening in real-life, and not manipulated in a particular condition (Chiang, Jhangiani & Price 2015). One of the issues regarding this however is the inability for the data to be causally determined. In that sense, research may show that PFP such as emotional feeding (Braden et al., 2014), restriction (Kroller et al., 2013), or UFAR (Powell et al., 2017) may be associated with EE, however the direction between these variables cannot be established. It may be just as likely that restrictive feeding practices leads to EE, just as much as EE behaviour leads to restrictive feeding practices.

2.1.3. Qualitative Studies

Also listed within the non-experimental category of research design, qualitative research uses data that is usually classed as non-numerical in nature and so cannot be analysed using statistical methods and techniques (Chiang, Jhangiani & Price 2015). Qualitative methodology aims to understand the 'how' and 'why' within the research, whereas the quantitative may explain the 'what' (Hesse-Biber, 2010). Qualitative research has a separate set of analysis tools, such as thematic analysis, which focuses on the themes that emerge from the non-numerical data. Moore and colleagues (2007) used qualitative interviews of mothers with 3-5 year old children, finding most common feeding practices of modelling, influencing children's attitudes and normal, and moderate use of pressure. Similarly, Carnell and colleagues (2011) also found commonly used PFP to promote or restrict intake of food, using such practices as instrumental feeding and rules around food intake. To date, no qualitative research has directly looked at the use of PFP and behaviours and EE in preschool aged children.

With these methodologies in mind, the current thesis focuses very much within the non-experimental research category, with Chapter 4 being a non-experimental cross-sectional multivariable path analysis looking at the relationship between parental practices and behaviours, child temperament and EE in preschool aged children, and Chapter 5 being a non-experimental interview based thematic analysed qualitative study looking at PFP, behaviours and EE in preschool aged children.

2.1.4. Epistemology

This thesis employed methodologies of a systematic literature review and meta-analysis, alongside a mixed method approach combining both non-experimental quantitative and qualitative approaches to collect, analyse and interpret the data (Creswell & Tashakkori 2007). Traditionally, an understanding was drawn that the two types of research methods were separate, being known as either quantitative or qualitative approaches. These both represent incompatible paradigms by which we research and study the social world. Both quantitative and qualitative approaches are underpinned by fundamentally different assumptions about the nature of the reality we live in, known as ontology, and the way we understand it, known as epistemology (Dures et al., 2011), representing two different paradigms supported by distinctive methodologies. Ontology regards the idea of the existence of facts, while epistemology regards the idea of whether we can know them or not, whether objectively or subjectively (Swift & Tischler, 2010).

Quantitative research asks questions such as ‘how many’ and ‘how strong’ in order to measure, predict, compare and correlate different variables, with a focus on numerical data. It focuses on mainly a change in behaviour, a deductive approach to testing existing theory and uses the assumption that reality is measurable, universal, objective and quantifiable. Qualitative elements of research on the other hand asks questions such as

‘what’ and ‘how’ in order to explore, gain insight and understand underlying issues that may not be illuminated via numbers alone, using instead non-numerical data such as text and picture formats. It focuses on mainly on meanings derived from the individual, an inductive approach to developing new theory and uses the assumption that reality is socially constructed by and between the persons or people who experience it (Dures et al., 2011; Hammersley 1992). The role of the qualitative researcher involves an understanding that they are the fundamental figure who collects, selects and interprets the data (Finlay, 2002) Through reflexivity, researchers need to acknowledge that how they interpret the data may be influenced by their own feelings, thoughts and past experiences (Palaganas et al., 2017). The use of reflexivity within the qualitative study is fundamental, and my reflexivity as a researcher is further highlighted in section 5.3.2 and strengths and limitations regarding it discussed in section 5.4.1.

Mixed method approaches aim to value data from a differing range of methodologies, whilst appreciating that are both elements of quantitative and qualitative are situated within an epistemological framework. It attempts to bridge a gap, with qualitative work making ‘insiders intelligible to outsiders’, mixed methods instead look to compliment both approaches by making quantitative data intelligible in its context, and making qualitative data justifiable (Batholomew & Brown 2012). Mixed method is founded on the thought process that there are multiple ways not only to understand the social world, but also what data is valuable when answering or developing theory, dealing with both the nature of the research question and the subsequent interpretation of the findings (Dures et al., 2011). Mixed methods in behavioural sciences have become more common in research due to the detailed and comprehensive analysis possible to achieve the research objectives and answer the research questions posed fully (Bryman 2006). There are four main types of mixed methodology within behavioural and psychological mixed methods research design; triangulation, embedded, sequential and exploratory. This study is defined mostly by the sequential design, also known as explanatory design, using firstly

quantitative data collection to obtain a clear picture of the research question and the data, and then followed by qualitative data collection to provide a better understanding of the findings and an explanation of the study in question.

The research within this thesis begins with a quantitative focus, looking at previous quantitative studies and literature and synthesising the data using a systematic review and meta-analysis. It then continues its quantitative focus with the exploratory non-experimental cross-sectional path analysis to investigate the relationship between a number of variables. After the quantitative path analysis, qualitative data helps explore the quantitative findings in depth. According to Creswell and Clark (2017) this explanatory, or sequential design, is recognised as the most simplistic but beneficial of the mixed methods designs. This is due to the two part structure allowing the research to be collected in two separate time frames, completing one data collection before gathering another. In addition, it means the findings can be explained in two stages, with first the 'what' of the data being interpreted and discussed, followed by the 'why', making it easier for the reader to get a clear picture from the findings. Therefore, using both methods can provide a comprehensive interpretation of the data. The current study firstly focuses quantitatively on the self-report data of the participants; the parents' discussing either themselves or the behaviours of their preschool aged child. This is important to note, as only parents in our study had the opportunity to provide data about both themselves and their child, with the child being of an age (between 2 – 5 years old) where they were unable to self-report data regarding their own behaviours. It is well documented in paediatric literature that information provided by the parents may not be equivalent to that reported by the child themselves, however research suggests that children only begin to show understanding and competence regarding self-report measures around the age of 6, and confident in answering them by the age of 8 years old (Riley 2004; Measelle et al., 2005; d'Autume et al., 2012).

2.2. Measures

The primary measures within the thesis are seen throughout the three main empirical chapters; with the systematic literature review and meta-analysis (Chapter 3) focusing mainly on the PFS and Feeding Practices, as well as Children's EE behaviours. The Quantitative cross-sectional study (Chapter 4) focuses on a large number of separate measures, including PFP, Parental Emotional Regulation, Parent affect in Feeding, Parental EE, Childs Temperament, and Childs EE. The qualitative interview based study (Chapter 5) is based on the concepts within the same measures as discussed in the quantitative cross-sectional study, using the model created within the path analysis, but instead uses it more as an exploratory guide to help illuminate the findings of the research.

2.2.1. Questionnaires

Numerous validated questionnaires are used within PFS and Practices to measure the parental styles, how they feed their children, and their practices used within the feeding environment. In addition to this, numerous questionnaires have been discussed regarding the measurement of eating behaviours, specifically regarding EE. Questionnaires are commonly used within research, as they are a validated measure of the particular behaviour in question. The majority of questionnaires are filled in via self-report measures, be it they are filled by the participant themselves about their own, or their child's, behaviour. Self-report measures do however come with their limitations, as they are more likely than other objective assessments of parenting to have bias or errors (Hughes et al., 2016). Research has shown that parents are more likely to underestimate their child's weight, even more so if the child has overweight or obesity (Scholtens et al., 2007). It also cannot be ruled out that parents are likely to report what they believe the researcher wanted to hear, or what they believe they should be portraying, termed social

desirability bias or reporter bias (Hankey et al., 2016; Bariola, Hughes & Gullone 2011). However self-report data has many advantages within research. By being able to administer questionnaires to large samples of people, it is possible to collect large data sets which are more generalisable to the population. In addition, the respondents are much closer to the issues in question than seen in other objective measures, for example observation research may only report the obvious side of a respondents behavioural or verbal responses (Demetriou, Uzun & Essau 2015). This is noted as validation studies indicated that parents self-reports of children's eating behaviours using the scales such as the Child Eating Behaviour Questionnaire (CEBQ; Wardle et al., 2001), or the Child Feeding Questionnaire (CFQ; Birch et al., 2001), correlated significantly with actual food consumption in children (Dubois et al., 2007; Carnell & Wardle 2008).

Throughout the thesis, self-report measures are discussed, whether it be previous studies that have used these measures across the systematic review and meta-analysis (Chapter 3), or current studies within the current cross-sectional study (Chapter 4). Within the systematic literature review and meta-analysis (Chapter 3), seven validated self-report measure parental styles and feeding practices are discussed; the Child Feeding Questionnaire (CFQ; Birch et al., 2001), the Comprehensive Feeding Practices Questionnaire (CFPQ; Musher-Eizenmann 2007), the Control Over Eating Questionnaire (COEQ; Ogden, Reynolds & Smith 2006), the Caregivers Feeding Styles Questionnaire (CFSQ; Hughes et al., 2005), the Preschoolers Feeding Questionnaire (PFQ; Baughcum et al., 2001), the Parent Feeding Style Questionnaire (PFSQ; Wardle et al., 2002) and the Feeding Practices and Structure Questionnaire (FPSQ; Jansen et al., 2014). In addition to these, we also discuss EE via two validated questionnaires regarding eating behaviours; the Child Eating Behaviour Questionnaire (CEBQ; Wardle et al., 2001), and the Dutch Eating Behaviour Questionnaire (DEBQ; Van Strein et al., 1986).

Moving to the Empirical Quantitative Cross-sectional Study (Chapter 4), 6 Validated Scales were used to measure Parent and Child Behaviours. Similar to the measures discussed in Chapter 3, the study in Chapter 4 uses the Comprehensive Feeding Practices Questionnaire (CFPQ; Musher-Eizenmann 2007) to measure PFP, and the Child Eating Behaviour Questionnaire (CEBQ; Wardle et al., 2001) to measure children's EE behaviours. Moving away from the measures discussed previously, four more self-report measures were used, the Feeding Emotion Scale (FES; Frankel et al., 2015) used to measure Parent affect in Feeding, the Difficulty in Emotions Scale (DERS; Gratz & Roemer 2004) to measure Parental ER, the Children's Behaviour Questionnaire (CBQ; Rothbart et al., 2001) to measure Childs Temperament, and the Dutch Eating Behaviour Questionnaire (DEBQ; Van Strein et al., 1986) to measure parents own EE behaviours. All of these questionnaires will be discussed in more detail below, regarding the subscales, items, Likert measurements and co-efficient scores.

2.2.1.1. Parental Feeding Styles Questionnaires

2.2.1.1.1. Caregiver's Feeding Styles Questionnaire (CFSQ)

The Caregivers Feeding Styles Questionnaire (CFSQ; Hughes et al., 2005) used within the systematic review and meta-analysis (discussed further in Section 3.3.3.2), is a 19-item scale that comprises of two subscales used to measure the overall PFS and pattern of parents. These are across two dimensions named demandingness or control, and responsiveness or warmth. Within the context of the feeding environment, demandingness refers to *how much* the parent encourages eating and responsiveness refers to *how* the parents encourage eating, that is, in a responsive or nonresponsive way. In this typological approach the two scores are derived by the two factors; measured by twelve items measuring parent-centred feeding directives, and seven items measuring child centred feeding directives, are measured across a 5-point Likert scale

with response options from; never, rarely, sometimes, most of the time, and always. The parent-centred directives and those that attempt to control children's eating through external pressure, with such tendencies as demands, threats and reward contingencies. The child-centred feeding directives on the other hand are those that promote child autonomy, with such directives as reasoning, complimenting, and helping the child to eat. The CFSQ is then measured using median splits with a high to low permitted categorisation, also known as a cross-classification, across two dimensions to identify four PFS; authoritative which is measured by high responsiveness and high demandingness, authoritarian which is measured by low responsiveness and high demandingness, indulgent which is measured by high responsiveness and low demandingness, and uninvolved which is measured by low responsiveness and low demandingness.

Because all feeding items in a turn assess the degree to which parents report doing something particularly to encourage or discourage a child's eating behaviours, the mean of all 19 items in total form the demandingness or control score, which in itself is a measure to determine how the parents got the child to eat, regardless of the type of feeding strategy used. Therefore, the measure for responsiveness is derived via the seven child-centred items that are then divided by the mean of the 19 items for each parent, thus resulting in a measure of the degree to which the parent used the child centred, in comparison to the parent centred techniques for child eating behaviours. This scale is further discussed in section 3.4.1 as the CFSQ is prevalent in the systematic literature review findings. The coefficient alphas of the subscales are high with alphas for the parent centred feeding directives of; .85 for demandingness and .71 for responsiveness.

2.2.1.1.2. Parental Feeding Style Questionnaire (PFSQ)

The Parent Feeding Style Questionnaire (PFSQ; Wardle et al., 2002) is a 27 item scale that comprises of four subscales used to better understand the feeding styles parents use with their children. These four subscales are defined as; instrumental feeding (4 items), Control over Eating (10 items), Emotional Feeding (5 items) and encouragement to eat (8 items). The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5; I never do, I rarely do, I sometimes do, I often do, and I always do, respectively. Scale scores for each subscale are obtained by calculating the means of the items comprising each of the scales.

The PFSQ allows the researcher to determine whether parents offer food to their child to deal with some issues as emotional distress, use food as a form of a reward to the child, or encourage the child to eat more than they originally wanted. With each of the subscales being a separate measure and entity, individual scores can be determined for each of the subscales and used independently to measure the feeding style of parents (Wardle et al., 2002). This scale is further discussed in section 3.4.1 as the PFSQ is prevalent in the systematic literature review findings. The coefficient alphas of the subscales were high, ranging from .67 to .83, with; .67 for instrumental feeding, .81 for Control over Eating, .83 for Emotional Feeding, and .74 for Prompting and Encouragement to Eat.

2.2.1.2. Parental Feeding Practices Questionnaires

2.2.1.2.1. Child Feeding Questionnaire (CFQ)

The Child Feeding Questionnaire (CFQ, Birch et al., 2001) is a 31 item scale that comprises of seven subscales used to better understand parents' perceptions and concerns regarding child obesity, child feeding attitudes and practices.

Focusing on the seven factors, four of these assess parents' perceptions of the child and parent weight, concerns regarding weight, and cognitions that may influence parental control in feeding situations. These are defined as; Perceived Responsibility for feeding (three items), Current and Retrospective Perceived Parent Weight (four items), Current and Retrospective Perceived Child Weight (six items), Concern for Child Weight (three items). These factors slightly differ regarding the terms, using similar Likert scales but different terminology amongst them. Firstly, Perceived Responsibility used a five point Likert scale from 1 to 5 with, never, seldom, half of the time, most of the time, and always respectively. Perceived Parent Weight and Perceived Child Weight on the other hand also used a five item Likert scale, but instead the terms from 1 to 5 are defined as; markedly underweight, underweight, normal, overweight, and markedly overweight respectively. Concern about Child Weight constitutes of a five item Likert scale from 1 to 5, using the terminology; unconcerned, a little concerned, concerned, fairly concerned, and very concerned respectively.

Focusing on the remainder of the seven factors, the final three assess parents' perceptions of their responsibility for child feeding, known as parental feeding practices. These are defined as; Restriction (8 items), Pressure to eat (4 items), and Monitoring (3 items). These factors slightly differ regarding the terms, using similar Likert scales but different terminology amongst them. Firstly, both Restriction and PTE used a five point

Likert scale from 1 to 5 with; disagree, slightly agree, neutral, slightly agree and agree. Finally, the Monitoring factor used a five point Likert scale from 1 to 5 with; never, rarely, sometimes, mostly, and always respectively. This scale is further discussed in section 3.4.1 as the CFQ is prevalent in the systematic literature review findings.

The factors for the total questionnaire are then obtained by calculating the mean score for the items loading on each particular factor. The coefficient alphas of the subscales are high with alphas for the parents' perceptions of the child and parent weight, ranging from .70 to .92, with; .88 for Perceived Responsibility, .71 for Perceived Parental weight, .83 for Perceived Child weight, .75 for Concern about child weight. Regarding the final three, the coefficient alphas of the subscales are high with alphas for the parents perceptions of their responsibility for child feeding, also known as parental feeding practices, the alphas for the feeding practices of; .70 for Pressure to eat, .73 for Restriction, and .92 for Monitoring.

2.2.1.2.2. Comprehensive Feeding Practices Questionnaire (CFPQ)

The Comprehensive Feeding Practices Questionnaire (CFPQ; Musher-Eizenmann 2007) is a 49 item scale that comprises 12 subscales used to better understand the feeding practices used by parents when feeding their children. The 12 subscales are defined as; Monitoring (4 items), Use of Food for Emotion Regulation (3 items), Use of Food as a Reward (3 items), Child Control (5 items), Modelling (4 items), Restriction for Weight (8 items), Restriction for Health (4 items), Teaching Nutrition (3 items), Encourage Balance and Variation (4 items), Pressure to Eat (4 items), Healthy Environment (4 items) and Involvement (3 items).

These factors slightly differ regarding the terms, using two Likert scales response options interchanged across the subscales. The subscales; Child Control, Emotion Regulation,

and Monitoring all used a 5 item Likert scale; never, rarely, sometimes, often and always respectively. The subscales; Environment, Food as a Reward, Involvement, Modelling, Pressure, Restriction for Health, Restriction for Weight, and Teaching about Nutrition used a 5 item Likert scale; disagree, slightly disagree, neutral, slightly agree, and agree respectively. The remaining subscale 'Encourage Balance and Variety used a combination of the two Likert scales above across its factor.

The CFPQ allows the researcher to measure the particular individual feeding practices that parents may use with their children at the mealtime, such as restricting certain foods from a child, monitoring the amount of food consumed or modelling certain behaviours to their child. These individual scores allow the researcher to understand which practices are salient within the feeding and eating relationship to better understand the development of maladaptive eating behaviours. This scale is further discussed in section 3.4.1 as the CFPQ is prevalent in the systematic literature review findings, and in 5.2.4 where it is used within the quantitative path analysis.

Each of these subscales separately have a high Cronbach's alpha, ranging from .58 to 81, with; .81 for Monitoring, .74 for Emotion Regulation, .69 for Food as a Reward, .69 for Child Control, .80 for Modelling, .70 for Restriction for Weight, .81 for Restriction for Health, .68 for Teaching Nutrition, .58 for Encourage Balance and Variation, .79 for Pressure to Eat, .75 for Healthy Environment and .77 for Involvement

2.2.1.2.3. Preschooler Feeding Questionnaire (PFQ)

The Preschooler Feeding Questionnaire (PFQ; Baughcum et al., 2001) is a 32 item scale that comprises of 8 subscales used to better understand parents' practices and beliefs, their inclinations and tendencies when feeding their preschool aged child. These factors are defined as; Difficulty in Child Feeding (6 items), Concern about Child Overeating or

being Overweight (7 items), Pushing to Eat More (5 items), Using Food to Calm Child (4 items), Concern about Child being Underweight (2 items), Child's Control of Feeding Interactions (3 items), Structure during Feeding Interactions (3 items), and Age Inappropriate Feeding (2 items).

The response format of the questionnaire is the same across each of the subscales, with a 5-point Likert scale ranging from 0 to 4; never, rarely, sometimes, often, and always respectively. Scale scores for each subscale are obtained by calculating the means of the items comprising each of the scales. This scale is further discussed in section 3.4.1 as the PFQ is prevalent in the systematic literature review findings.

The PFQ allows researchers to attempt to identify some maternal feeding practices and beliefs during a child's early years that may be associated with childhood obesity. It contains subscales and factors that explore feeding practices such as using food to calm or soothe a child and the degree to which mealtimes are interactive, structured or scheduled (Baughcum et al., 2001).

The coefficient alphas of the subscales were varied across the subscales, with a Pearson correlation coefficient reported with factors of just two items, and Cronbach alpha for factors with more than two, with Cronbach alphas ranging from .37 to .97 across 6 of the larger subscales; .97 for Difficulty in Child Feeding, .83 for Concern about Child Overeating or being Overweight, .70 for Pushing to Eat More, .68 for Using Food to Calm Child, .50 for Child's Control of Feeding Interactions, .37 for Structure during Feeding Interactions, and Pearson correlation coefficients of; .69 for Concern about Child being Underweight, and .18 for Age Inappropriate Feeding.

2.2.1.2.4. Feeding Practices and Structure Questionnaire (FPSQ)

The Feeding Practices and Structure Questionnaire (FPSQ; Jansen et al., 2014) is a 40 item scale that comprises of nine factors used to better understand PFP, specifically maternal responsiveness to children's hunger and satiety signals that are facilitated by the routine and structure within feeding. Focusing on the nine factors, four of these reflected the non-responsiveness feeding practices with a potentially unfavourable impact on the child's intrinsic capability for intake regulation. These are defined as; Distrust in Appetite (4 items), Reward for Behaviour (6 items), Reward for Eating (6 items), and Persuasive Feeding (6 items).

The remaining five factors reflected the structure of the meal environment and the limits. These are the feeding practices that potentially support the development of autonomy in eating and related wot the provision of a structured environment. These are defined as; Covert Restriction (4 items), Overt Restriction (4 items), Structured Meal Setting (4 items), Structured Meal Timing (3 items), and Family Meal Setting (3 items).

These factors slightly differ regarding the terms, using three main Likert scales response options interchanged across the subscales. Each of the subscales range from 1 to 5, with higher scores on all feeding practices indicating a more frequent endorsement of that practice. The subscales; Reward for Eating, Covert Restriction, Structured Meal Setting, and Structured Meal Timing all used a 5 item Likert scale; never, rarely, sometimes, often and always respectively. Overt Restriction used a 5 item Likert scale; disagree, slightly disagree, neutral, slightly agree, and agree respectively. The remaining three subscales; Distrust in Appetite, Reward for Behaviour and Persuasive Feeding, all use a combination of the two Likert scales above across their factors. Distrust in appetite also uses a further Likert scale, when referring to the decisions made on how much food the child eats, with a 5 item Likert scale; You only, Mostly you, You and your child equally,

Mostly your child, Your child only respectively. This scale is further discussed in section 3.4.1 as the FPSQ is prevalent in the systematic literature review findings.

The 9 factor structure of the FPSQ showed a high internal validity, with Cronbach's alpha scores ranging from .61 to .89, with; .63 for Distrust in Appetite, .86 for Reward for Behaviour, .89 for Reward for Eating, .73 for Persuasive Feeding, .80 for Covert Restriction, .61 for Overt Restriction, .79 for Structured Meal Setting, .68 for Structured Meal Timing, and .87 for Family Meal Setting.

2.2.1.3. Emotional Eating Questionnaires

2.2.1.3.1. Child Eating Behaviour Questionnaire (CEBQ)

The Child Eating Behaviour Questionnaire (CEBQ; Wardle et al., 2001) is a 35 item scale that comprises of 8 subscales used to better understand children's eating behaviours. The eight subscales are defined as; Food Responsiveness (5 items), Enjoyment of Food (4 items), Emotional Overeating (4 items), Desire to drink (3 items), Satiety Responsiveness (5 items), Slowness in eating (4 items), Emotional undereating (4 items), and Fussiness (6 items). The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5; never, seldom, sometimes, often, and always respectively. Scale scores for each subscale are obtained by calculating the means of the items comprising each of the scales.

The CEBQ allows researchers to explore the range of dimensions of eating styles with a reliable and valid self-report measure completed by parents. It provides a useful measure of eating style for researchers focusing on the early precursor to eating behaviours and obesity. It allows researchers to focus on both food avoidant behaviours such as FF and EUE, and food approach behaviours such as FR and EOE. The definitions and

background of these food approach and avoidant behaviours have been discussed previously in section 1.2, with the potential relationship between these behaviours discussed. This scale is further discussed in section 3.4.1 as the CEBQ is prevalent in the systematic literature review findings, and in 5.2.4 where it is used within the quantitative path analysis.

Each of these subscales had high Cronbach's alpha when measured with children aged 5.6 (1.5) years old; ranging from .75 to .91, with; .82 for Food responsiveness, .91 for Enjoyment of food, .79 for Emotional Overeating, .90 for Desire to Drink, .83 for Satiety Responsiveness, .80 for Slowness in eating, .75 for Emotional Undereating and .91 for Fussiness.

2.2.1.3.2. Dutch Eating Behaviour Questionnaire (DEBQ)

The Dutch Eating Behaviour Questionnaire (DEBQ; Van Strein et al., 1986) is a 33 item scale that comprises or 3 subscales used to measure adult eating behaviours. The 3 subscales are defined as; Emotional Eating (13 items), External Eating (10 items), and Restrained Eating (10 items).

The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5; never, seldom, sometimes, often and very often. In addition, 2 items within the Restrained subscale and 10 items in the Emotional Eating Subscale also have 0 category on the Likert scale for a non-relevant response.

The DEBQ is another measure of EE used in research, although not defined into subscales of EOE and EUE like the CEBQ (Wardle et al., 2001). It instead focuses more on the overeating element by default with the factor prefix of "Do you have a desire to eat when…", thus looking for at the consumption instead of the avoidance of food. The

questionnaire allows the researcher to focus on the adult food behaviours with the DEBQ, and more recently children's consumption of food with the DEBQ-C (Van Strein and Oosterveld, 2008). This scale is further discussed in section 3.4.1 as the DEBQ is prevalent in the systematic literature review findings. The EE subscale of the DEBQ was also chosen as part of Chapter 4's path analysis, used to measure parental EE with its relationship with children's EE behaviours, described further in 5.2.4. Each of these subscales separately have a high Cronbach's alpha ranging from .80 to .95, with; .94 for Emotional Eating, .95 for Restrained Eating, and .80 for External Eating.

2.2.1.4. Emotional Regulation Questionnaires

2.2.1.4.1. Difficulty in Emotion Regulation Scale (DERS)

The Difficulty in Emotion Regulation Scale (DERS; Gratz & Roemer 2004) is a 41 item scale that comprises of six subscales used to assess difficulties in emotional regulation among adults. The measure is an interpretative conceptualisation of emotional regulation, involving not only the modulation of emotional arousal, but also the awareness, understanding, and acceptance of emotions, as well as the ability to act in desired ways regardless of the emotional state.

The six subscales are defined as; Nonacceptance of emotional responses (6 items), difficulties in engaging in goal-directed behaviour (5 items), impulse control difficulties (6 items), lack of emotional awareness (LEC; 6 items), limited access to emotional regulation strategies (LAERS; 8 items), and lack of emotional clarity (LEC; 5 items). The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5; almost never, sometimes, about half the time, most of the time, and almost always respectively. The coefficient alphas of the DERS subscales were high ranging from .80 to .89, with; .85 for Nonacceptance of emotional responses,

.89 for difficulties in engaging in goal-directed behaviour, .86 for impulse control difficulties, .80 for LEA, .88 for LAERS, and .84 for LEC.

The DERS allows the researcher to measure ER in adulthood, specifically the lack of access to or awareness of strategies to regulate their emotions in certain situations. It enables research to focus on not only the understanding adults have about their own emotions, but also to accept and deal with their emotions. This would be important in the research field of feeding and eating behaviours as the feeding environment can be an emotional one on occasions, and the ability to recognise and control those emotions may be important in the context of positive feeding behaviours. This scale is further discussed in section 4.2.4 where it is used within the quantitative path analysis.

2.2.1.5. Child Temperament Questionnaires

2.2.1.5.1. Children's Behaviour Questionnaire (CBQ)

The Children's Behaviour Questionnaire (CBQ; Rothbart et al., 2001) standard version is a 195 item scale that comprises of 15 primary temperament characteristics that fall into three broad dimensions of Temperament. These map on to the three broad dimension subscales of; Negative Affectivity, Extraversion / Surgency, and Effortful Control, used to understand the behaviour of children between 3 and 7 years of age. The four primary temperament characteristics mapped on to Surgency are; High Intensity Pleasure, Activity Level, Impulsivity, and Shyness. The five primary temperament characteristics mapped on to Negative Affectivity are; Discomfort, Fear, Anger/Frustration, Sadness, and Soothability. The four primary temperament characteristics mapped on to Effortful Control are; Inhibitory Control, Attentional Focusing, Low Intensity Pleasure, and Perceptual Sensitivity. The final two characteristics Positive Anticipation and Smiling/Laughter are inconsistent with respect

to primary loadings and often load highly on more than one scale. Each of these within the 195 item questionnaire have approximately 12 to 14 items on each of the 15 scales.

Rothbart and colleagues (2001) also created the Short version of the CBQ at 95 items, and the Very-short version of the CBQ at 36 items. The short version of the CBQ uses the 15 characteristics, with each of the 15 scales having approximately 6 to 8 items. Within this thesis we focused on the use of the Very Short Form of the CBQ, and thus continue to discuss the 36 item questionnaire in more detail. This Very Short Form Version of the CBQ each has the same three broad dimensions, with 12 items mapped in each dimension, equating to a total of 36 items. Within the Very Short Form of the CBQ, Negative Affect has temperament characteristics in Anger (2 items), Discomfort (3 items), Sadness (3 items), Soothability (2 items), and Fear (2 items). Surgency in the Very Short Form of the CBQ has temperament characteristics in Impulsivity (3 items), Shyness (3 items), Activity Level (3 items), and High Intensity Pleasure (3 items). Effortful Control in the Very Short Form of the CBQ has temperament characteristics in Inhibitory Control (3 items), Attention Focusing (3 items), Low Intensity Pleasure (3 items), and Perceptual Sensitivity (2 items).

The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 7 with response options of; extremely untrue, quite untrue, slightly untrue, neither true or not true, slightly true, quite true, extremely true. In addition, where the question cannot be answered because the participant has never seen the child in that situation, then an ‘Not Applicable’ option can be used. This scale is further discussed in section 4.2.4 where it is used within the quantitative path analysis. Each of these subscales for the Very Short Form of the CBQ have a high Cronbach’s alpha ranging from .72 to .75, with; .75 for Surgency, .72 for the Negative Affect, and .74 for the Effortful Control, with children aged between 3 and 7 years.

2.2.1.6. Negative Affect Questionnaire

2.2.1.6.1. Feeding Emotion Scale (FES)

The Feeding Emotion Scale (FES; Frankel et al., 2015) is a 20 item scale examining the parent affect in the context within the feeding environment. The FES comprises of 2 distinct subscales; positive affect (8 items) and negative affect (12 items). These subscales focus on how parents feel when feeding their child, with positive affect being measured with words such as but not limited to; Energetic, Loved, Content, Rewarded, and Happy. In comparison, negative affect is measured with words such as but not limited to; Rejected, Anxious, Overwhelmed, Lonely and Unloved. This scale is further discussed in section 4.2.4 where it is used within the quantitative path analysis.

This questionnaire supports researchers who are interested in the impact of parental positive or negative affect on the feeding environment. This an important concept given that how a parent feels in a situation may impact of the practices and the behaviours they conduct with their child. The FES specifically looks at how parents feel during the feeding process, with a scores for both positive and negative affect in feeding.

The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5 with the following response options: never, rarely, sometimes, most of the time, and always. The coefficient alphas of the subscales were high with; .85 for Positive Affect, and .84 for Negative Affect.

2.2.1.7. Eating Behaviour Questionnaires

2.2.1.7.1. Control Over Eating Questionnaire (COEQ)

The Control Over Eating Questionnaire (COEQ; Ogden, Reynolds & Smith 2006) is a 10 item scale that comprises 2 subscales used to better understand the levels of control used by parents. The 2 subscales are defined as; Overt control (5 items), the firmness regarding a child's eating patterns; and Covert Control (5 items), the control of the food environment. The items in the COEQ were derived from previous research by Brown and Ogden (2004). The response format of the questionnaire is the same across each of the subscales, with a Likert scale ranging from 1 to 5; never, rarely, sometimes, most of the time, and always.

This questionnaire was designed to assess levels of control by parents, and how levels of overt and covert control related to a child's snacking behaviour. This is a useful tool for researchers as parental control is a varying factor, with research suggesting differing levels of control can be either a positive or negative to a child's development of eating behaviours (Ogden, Reynolds & Smith, 2006). This scale is further discussed in section 3.4.1 as the CFPQ is prevalent in the systematic literature review findings. The coefficient alphas of the subscales were high, with; .71 for Overt Control and .79 for Covert Control.

2.2.1.8. Additional Information

2.2.1.8.1. Child and Parent Demographic and Anthropometric Information

For all studies in the thesis, parents were asked to report on demographic information about themselves and their child. Regarding their own demographics, parents in both

quantitative and qualitative studies (Chapters 5 and 6) were asked to report on their age, gender, ethnicity, location (via zip / postcode), their country of residence, education level, employment status, current self-reported height and weight, and whether they have a medical condition that may affect their weight. Any participant who had a medical condition was excluded from completing the rest of the demographics and questionnaire and thanked for their time. Regarding the household demographics, parents in both quantitative and qualitative studies (Chapters 5 and 6) were asked to report on their marital status, how many children live in the household, and how many children are of preschool aged who live in the household. Regarding their child's demographics, parents in both quantitative and qualitative studies (Chapters 5 and 6) were asked to report on the age and gender of their youngest preschool aged child, their current clothing size, their last height and weight measurement and how this was recorded.

2.2.1.8.2. Body Mass Index (BMI)

Regarding the height and weight measurements, parents were asked to self-report their own and their child's height and weight data, unless their child had recently been measured via a preschool or GP programme. This is a quick and effective way to obtain data to calculate the BMI of the Parent and Child. As previously discussed in Section 1.1.1, BMI is calculated by a person's weight (in kilograms) divided by the square of their height (in metres), BMI = kg/m^2. The measurement of BMI for children is different however, mainly due to their changes and growth throughout childhood. Therefore, the study instead used the height and weight data to calculate a measurement of BMI Z Score and Child Percentile Measure. BMI Z Score classes a preschool aged child under the age of 5 as having overweight or obesity if their weight is two or three Standard Deviations above the World Health Organisation (WHO) Child Growth Standards median respectively (WHO, 2006). The WHO Child Percentile Measure was developed in 2006 and is used as an updated measure from the UK90 Childhood Weight Reference Curves

(Freeman et al., 1995), using the child's age, height and weight and is plotted on a graph alongside the general population, with a Child Percentile score of 85% or more being classed as having overweight.

2.3. Ethical Issues and Approval

Ethical permission was gained from Coventry University Ethics Committee (CU Ethics) prior to each study commencing (Appendix for Ethical Approval Certificates).

2.3.1. Informed Consent

Within the empirical studies, each participant was asked to read a Participant Information Sheet (PIS) and ask any questions they may have. Questions could be asked either through the researchers email address (chapter 4) provided on the participant information sheet, or face-to-face for the qualitative Interviews (chapter 5) before they decided to continue in the study and sign the consent form. The participant was able to keep hold of a PDF (Chapter 4) or Paper (Chapter 5) copy of the Participant Information Sheet, along with the contact details of the researcher for any questions later on, in addition to being able to withdraw their data (chapter 5) with two weeks of completing the interview. The participants taking part in the online questionnaire were unable to contact the researcher to remove their data, as the questionnaire was anonymous and so the researcher would not be able to determine the participants data to remove it from the analysis.

Informed consent was gained from the parent participants by the researcher before they took part in the online questionnaire (chapter 4) or interview (chapter 5). They were

asked to read the PIS, ask any questions they may have and signed the Consent Form (Appendix).

2.3.2. Addressing Potential Ethical Issues

Ethical considerations were taken into account regarding the questions being asked about parent and child's weight within the demographic questionnaire, and their child's eating, emotions and behaviours within the main part of the quantitative questionnaire (127 items). This area of questioning may be considered a sensitive topic area to some, especially where weight or disordered eating may be concerned. Therefore they were made aware that if the questionnaire brought up any questions regarding the parents or their child's health or behaviours, they were recommended to speak to a medical professional such as their Family Doctor or General Practitioner.

Ethical issues were also addressed regarding holding on to sensitive information within the online software capacity (chapter 4). The benefits of the Qualtrics software, being able to hold the participants place within the questionnaire for seven days, could be discussed as a potential ethical issue as after the seven days lapsed, the data would be exported to the analysis section. This may cause some ethical concern, as firstly, the participant may have decided to no longer complete the questionnaire and thus the data should not be used. Secondly, if the participant was to enter any data about themselves on their smart device and it was to be picked up by someone else during those 7 days. However this feature is only possible on devices that are not public computers, thus the private data that the participant may add about themselves would be on a privately owned devices that they would take responsibility for in their everyday life. It must be noted that the 'bookmarking' feature of the questionnaire is only possible on the same device that it was started on, and so if the participant was to then pick up the questionnaire on another device, they would have to begin the questionnaire again. Due

to both of these reasons, the questionnaire was only analysed if the participant had reached the end of the questionnaire, and if they had completed over 90% of the questions.

An additional potential ethical issue is the idea of payment for their time. Regarding the quantitative online questionnaire (chapter 4), due to the large numbers of data collection, instead of a voucher per participant, a prize draw could be entered into to win a number of vouchers, with 2 x £50 vouchers, 5 x £20 vouchers, and 5 x £10 vouchers available. This however was stated in the ethics and passed ethical approval, and deemed not to be of ethical risk, as it was not deemed a too higher payment to class as coercion in participation. Regarding the qualitative (chapter 5) each participant was paid £10 in vouchers as a thank you for their time, which was around 48 minutes of interview on average.

2.4. Summary

In this chapter I have provided an overview of the methods followed to achieve the overall aims of the thesis. The overall thesis explores the parent and child emotionality, the PFP and the development of EE in preschool aged children. The quantitative data explores the relationship between the parent and child factors and the qualitative data aims to illuminate the findings through parents' own experience. The methodological principles discussed will be further explored in more detail in each of the forthcoming chapters.

3. Systematic Literature Review & Meta-analysis "Which Parental Feeding Styles and Practices are associated with Emotional Eating Behaviour in Preschool Children? A Systematic Review and Meta-analysis"

Abstract

Focusing on the relationship between parental feeding style (PFS) and parental feeding practices (PFP) and the development of emotional eating (EE) behaviour in preschool aged children, a systematic review and meta-analysis of the existing evidence was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Inclusion criteria included cross-sectional data of parents with children aged between 2 and 5 years old, the use of parental feeding styles and practices, and the outcome measures of either emotional eating (EE), emotional overeating (EOE) or undereating (EUE). Six papers were included from search results of 10,269, which showed EOE was associated with higher levels of the feeding practices; restriction, PTE, emotional feeding, and use of food as a reward, and monitoring with lower levels. EUE was associated with higher levels of PTE and monitoring with lower levels. Meta-analyses found significant positive associations between Restriction and EOE ($r=0.149$, $p<0.001$), and negative associations between Monitoring ($r=-0.148$, $p<0.001$) and EOE. Authoritative and indulgent PFS were associated with higher and lower EOE levels respectively. No associations were found between PFS and EUE. The findings support future research into the exploration of factors relating to preschool children's EE by highlighting particular PFP and PFS associated with the development of EE behaviours in preschool aged children, although causality cannot be established. Limitations of findings and future directions are discussed.

3.1. Introduction

Within the UK, almost one quarter of 4 to 5 year-old children (22.8%) are classified as having overweight or obesity, with 9.5% of these classified in the obese category (POS, 2019). One of the main focuses within the current research on childhood obesity is the development of child eating behaviours with some becoming apparent around preschool age. As section 1.2 discusses, children's eating behaviours have been categorised into two distinguishable types; food approach, including EOE, and food avoidance including EUE. Although these two eating behaviours are from differing groups, they have been found in recent cross-sectional research to also positively correlate (Herle et al., 2017). This present study is focused on these two correlated behaviours, emotional under and overeating, termed EE as an encompassing term.

One of the main areas of EE development discussed currently within in the literature is of the use of PFS and practices and its relationship with EE behaviours. Section 1.3 discusses in detail PFS and PFP, including the research investigating restrictive and controlling feeding practices and their relationship with EE. It was suggested by Wardle and colleagues (2001) that EE behaviours are identified in children between the ages of 3 and 5 years old, and be more salient with increasing age (Ashcroft, Semmler, Carnell, Van Jaarsveld & Wardle, 2008). It is important to consider whether the behaviour itself develops around this age, or simply the identification of the behaviour due to the increasing ability for the children to communicate (Herle et al., 2018) This idea has been supported in a recent longitudinal study which parents who reported the UFAR and 'restriction' with their 3 to 5 year old children, were more likely to have children who emotionally ate 2 years later (Farrow et al., 2015). With this development of EE in the young age group; particular feeding practices or styles are suggested across the literature to be related in either a protective or detrimental way with children's EE behaviours, although there are still mixed findings within these relationships. (Kroller et al., 2013;

Braden et al., 2014). A number of systematic reviews have focused on PFS and practices on weight status (Shloim et al., 2015; Litchford et al., 2020) and eating in the absence of hunger (Lansigan et al., 2015). They all found such parental feeding relationships as '*restriction'* in a majority of studies links to higher weight status, BMI and eating in the absence of hunger. However they all do discuss an element of conflicting results, with some studies finding restriction linking to more food avoidant behaviours.

A challenge found within the research of parental feeding practices (PFP) is the significant overlap within research regarding their definitions and terminologies (Blissett, 2011). Vaughn and colleagues (2016) systematically reviewed literature on PFP and categorised them into three main elements; coercive control, structure and autonomy support. This is an interesting concept given the vast number of feeding practices that are previously noted to develop maladaptive eating behaviours in preschool aged children. Using standardised definitions and measures, Vaughn and colleagues (2016) suggest that clear terminology and understanding on the specific practices is needed to facilitate future research and minimize the conflicting discrepancies of feeding practice definitions that Shloim and colleagues (2015) found within their review. To date currently no published systematic reviews have specifically examined the relationship between PFS and feeding practices, and EE behaviours in preschool aged children. Furthermore, whilst existing research has examined the relationship between PFS and practices and broader outcome measures such as child weight and BMI, there is currently a lack of research examining specifically EE outcomes in this age group. This is an important omission in the literature as this is the age whereby EE behaviour has been hypothesised to initially develop. Identifying these practices and the use of them in feeding and mealtime situations would support developing future interventions in targeting PFS and practices that may result in EE behaviours in preschool aged children. This systematic review therefore aims to investigate which PFS and feeding practices are associated with EE behaviours in preschool aged children, defined as 2-5 years old in the present

study, by conducting a systematic review of the literature. A second aim of the review is to conduct a meta-analysis to quantify the relationship between PFS and practices, and preschool aged children's EE behaviours. Thirdly, the review aims to examine if there are any differences in type of PFP and PFS used and EE outcomes.

3.2. Method

3.2.1. Design

A systematic review was conducted, following guidelines from York's Centre for Reviews and Dissemination (CRD, 2009). The protocol was published on PROSPERO on 29th June 2017 (CRD42017070889).

3.2.2. Search Strategy

Five electronic databases were searched in October 2017 (Cochrane, Scopus, CINAHL Complete, MEDLINE, and PsycINFO) using the search terms; (Parent* OR mother OR father OR caregiver OR grand* OR matern* OR patern* OR guardian OR aunt* OR uncle) AND (Child* OR infant OR toddler OR pediat* OR paediat* OR girl* OR boy* OR Preschool* OR pre-school nurser* OR kindergarten OR daughter OR son) AND (Feeding OR feeding style* OR feeding practice* OR feeding pattern* OR feeding method* OR feeding behavio* OR permissive OR authoriata* OR restricti* OR pressure OR pressure monitoring OR indulgent OR responsive OR controlling OR forceful) AND (Emotional eat* OR eating patterns OR eating behavio* OR feed* behavio* OR disordered eating). Date limits were set to January 1990 to October 2017, and the searches were more recently updated from October 2017 to August 2019.

These were then screened via title, abstract and full text before being included in the systematic review for analysis. Grey literature was examined, using two databases (GreyLit and OpenGrey). A request for further additional or unpublished articles relevant to the review was sent out through Research Gate, Linkedin and Twitter and seven relevant experts in the field were also contacted via email correspondence for any relevant papers. A second reviewer also screened 10% of the titles, abstracts and full texts, with an overall inter-rater reliability of 96%, with a Cohen's Kappa score of 0.97 (SE 0.009), with 95% confidence interval from 0.952 to 0.988. Data extracted from the relevant papers included; date of study, research aims, research setting, parental population characteristics such as age weight, and marital status, child characteristics i.e. age in months and years, and weight status (percentile measures, BMI z-scores), study design, type of parental style, PFS and feeding practices, and the children's EOE and EUE outcome measures. Correlational and regression data of the relationship between PFS and feeding practices were also extracted to allow for calculation of effect sizes.

After retrieving the relevant full texts, a hand search of forward and backwards citation searching was conducted in the reference list of the accepted papers.

3.2.3. Inclusion/Exclusion Criteria

3.2.3.1. Study design

Epidemiological studies examining the relationship between PFS or feeding practices and EOE and EUE behaviour in preschool children were included. Epidemiological studies that used cross-sectional, longitudinal, or prospective cohort research designs were eligible for inclusion. Studies that employed randomised controlled trials were excluded, as were laboratory-based experimental studies, case studies and qualitative studies due to the manipulation of a variable (experimental studies) or the inability to

measure the scales used (qualitative studies). English language only papers were included for pragmatic reasons.

3.2.3.2. Participants

Studies which explicitly targeted parents (mothers, fathers or both), or other primary caregivers (i.e. grandparents, legal guardians) of preschool aged children aged from 2 years old to 5 years old (24-60 months) were included. Studies were excluded if they specifically targeted primary school-aged children, adolescents, or if the study met at least one of the following criteria; i) the age range of children included in the study was stated as being outside of 24-60 months., ii) the mean age of the children included in the study was stated as being under 24 months or over 60 months of age. Studies were excluded if they included children with a medical condition which could significantly impact on eating behaviour or child weight status (e.g. Prada-Willi syndrome, hypothalamic obesity), and studies targeting parents or children with a diagnosed eating or feeding disorder were excluded.

3.2.3.3. Outcomes (including measures).

Studies were included if they employed a quantitative measure of PFS or PFP, as well as a quantitative measure of child emotional over- and/or undereating behaviour. Studies which examined the relationship between PFS or practices and child weight-status were only included if they also included a measure of preschool children's EOE and EUE behaviour. Studies focused on breastfeeding were excluded.

3.2.4. Screening and Data Extraction

In accordance with York's Centre for Reviews and Dissemination (CRD, 2009) for conducting systematic reviews, studies were screened through three separate distinct phases; 1) title screening, 2) abstract screening, and 3) full text screening, to identify eligible studies for inclusion in the review. All screening was completed by the first author (RM) and 20% of all title, abstract and full text screening was completed by a second researcher (SW) to ensure reliability. Discrepancies in decisions were resolved by discussion between the researchers (RM and SW), additional members of the research team were consulted to resolve disagreements where required (JB, DL).

3.2.4.1. Data extraction

Relevant papers identified via the database search were downloaded to RefWorks ProQuest 2.0. Data were extracted against the inclusion criteria using a data extraction form on an excel spreadsheet. The data extracted included; date of study, research aims, research setting, parental population characteristics such as age weight, and marital status, child characteristics i.e. age in months and years, and weight status (percentile measures, BMI z-scores), study design, type of parental style, PFS and feeding practices (e.g. restriction, modelling, UFAR, and instrumental feeding) (See Table 4 for full list) and the children's EOE and EUE outcome measures. Correlational and regression data of the relationship between PFS and feeding practices were also extracted to allow for calculation of effect sizes. The data extraction form is available (Appendix 1.1)

3.2.5. Data Quality Assessment

The quality of papers included were assessed using the NIH Quality Assessment Tool for Observational Cohort and Cross-sectional studies (NIH, 2018). Studies were evaluated based on a 14-item criteria checklist, with quality assessment criteria including; whether the research objective was clearly stated, the study population was

clearly defined, the outcome correctly measured, amongst others (see appendix 1.2 for full list). Each of these studies were scored against the 14-item criteria using the Quality Rating scoring of i) Yes (it was present in the paper), ii) No (it was not present in the paper), or iii) other. Within the category of 'Other', studies were categorised as "Cannot Determine", "Not Applicable", or "Not Reported". From this scoring, study quality was ranked as Good, Fair or Poor. In general terms, a "good" study was defined as having the least risk of bias, and results considered to be valid. A "fair" study was susceptible to some bias but deemed not sufficient enough to invalidate the results. The "poor" rating of studies indicated a significant risk of bias, and normally excluded from the study, unless no other evidence available whereby the poor-quality studies were considered.

3.2.6. Data Analysis

Each of the included studies used subscales from larger questionnaires, rather than composite measures to examine specific types of PFS and feeding practices. Due to the number of varying questionnaires and subscales used in addition to the heterogeneity of the types of PFS and feeding practices measured, each measure was extracted and grouped together in subgroups to aid analysis and synthesis. PFS are seen across the literature to be one of four main groups; *Authoritative*, *Indulgent*, *Uninvolved* and *Authoritarian* and therefore have been defined as such within the current review. With regards to PFP, the varying definitions and types of feeding practices create a challenge regarding synthesis of findings, due to their heterogeneity, therefore feeding practices in the present study were categorised into directive and non-directive feeding practices (Ogden et al., 2006), and further sub-categorised by the definitions within the feeding practices questionnaires used, with directive feeding practices labelled by; *Pressure to Eat, Restriction*, *Overt Control*, *UFAR / Instrumental Feeding*, *emotional feeding*, and non-directive feeding practices labelled as; *monitoring* and *covert control*.

3.2.7. Effect Size Estimation

Regarding the meta-analysis, raw data was retrieved where available, with authors contacted for possible additional data. Correlations, beta weights, odds ratios, p values, or F statistics were extracted from each study in order to calculate standardised correlational effect sizes. This data was entered into Comprehensive Meta-Analysis (CMA) version 3 and subsequently transformed into weighted effect sizes (r). As previously discussed, all studies employed subscales rather than composite measures, therefore separate meta-analyses of standardised effect size statistics were conducted separately for each type where correlational or regression data from at least two studies were available. In total, three random effects meta-analyses of the standardised effect sizes (Ellis, 2010) of the association between three PFP (PTE, restriction, monitoring) and preschool child EOE and EUE, were conducted. Insufficient data were available to conduct a meta-analysis for the remaining eight types. Heterogeneity was examined using the Q co-efficient statistic.

3.3. Results

Figure 4 shows the initial search which identified a total of 10,269 articles, of which 3090 papers were removed due to duplication. A further 7039 papers were excluded upon a review of the title and abstracts. The remaining 140 papers were retrieved and read via full text, one hundred and thirty five of these were excluded from this review for the following reasons; not written in English (n = 3), not a human based study (n = 1), not having EOE and EUE as an outcome behaviour (n = 102), the age of the child being less than 2 years old or more than 5 years old (n = 14), and incorrect study type (n = 15). One additional paper was identified as a result of forward and backward citation searching.

In total, six unique studies were included in this study. See figure 4 for the flowchart of the papers screened and taken to full text.

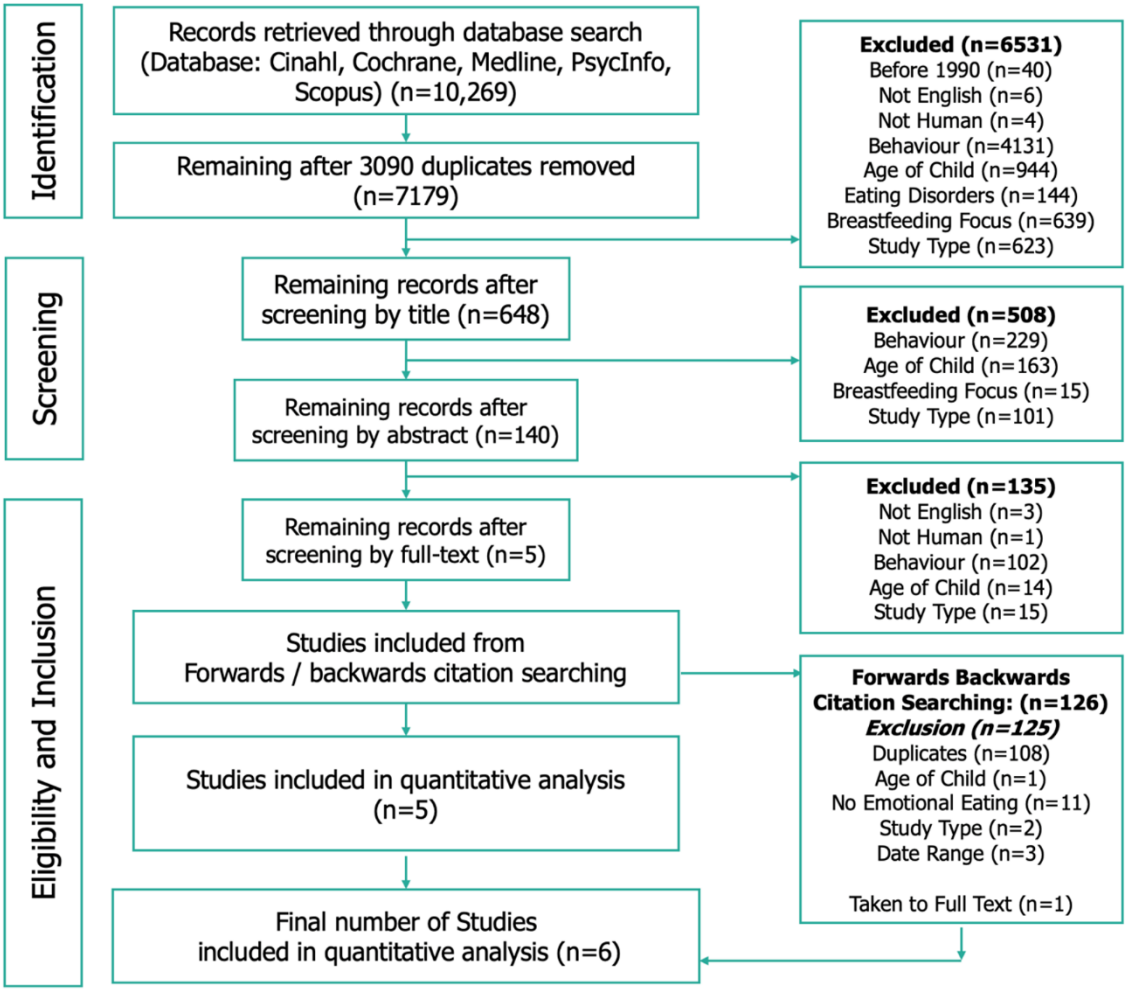

Figure 4: Data Screening PRISMA Flowchart

As discussed in section 1.5 regarding data quality assessment, the 6 papers were assessed for Quality Rating using the NIH Quality Assessment Tool and found to be of a Good Rating to be considered for this review. The full list of Quality Assessment questions can be seen in Appendix 1.2. See Table 2 for the Results of the Quality Rating by Author name. The overall inter-rater reliability between researchers across all three phases was 96%, with a Cohen's Kappa score of 0.97 (SE 0.009), with 95% confidence interval from 0.952 to 0.988.

Table 2: NIH Quality Rating by Study Name

Quality Rating by Study	
Study	Quality Rating
Hankey, Williams & Dev, 2016	Good
Haycraft and Blissett, 2012	Good
Hughes, Power, O'Connor, Orlet Fisher & Chen, 2016	Good
Jansen et al., 2012	Good
Powell, Frankel & Hernandez, 2017	Good
Rodgers et al., 2013	Good
Rated as Good, Fair, or Poor (NIH Quality Assessment Tool)	

3.3.1. Study characteristics

Out of the six papers identified in this review, with four investigated PFP only, one investigating PFS only, and one combining both PFS and feeding practices. Out of the two investigating *PFS* (one solely and one combined with feeding practices), one study was cross-sectional (Hankey et al., 2016) and one longitudinal (Hughes et al., 2016). Out of the five investigating *PFP* (four solely and one combined with PFS), three were cross-sectional (Haycraft & Blissett, 2012; Jansen et al., 2012; Powell et al., 2017) and two were longitudinal (Hughes et al., 2016; Rodgers et al., 2013). The majority of the studies included in this review were conducted in the USA (n = 3; Hankey et al., 2016; Hughes et al., 2016; Powell et al., 2017), with the others in the UK (Haycraft & Blissett, 2012), Australia (Rodgers et al., 2013) and the Netherlands (Jansen et al., 2012). The earliest studies in the review was published in 2012 (Haycraft & Blissett, 2012; Jansen et al., 2012), and the most recent in 2017 (Powell et al., 2017). More detail information regarding the study characteristics are shown in Table 3. All six studies used non-clinical

samples, with the sample sizes in these studies ranging from 96 parents and 48 children (Haycraft & Blissett, 2012) to 3197 parents and child dyads (Jansen et al., 2012). Three of the six studies had sample sizes >200 participants (Jansen et al., 2012; Powell et al., 2017; Rodgers et al., 2013).

All studies in the current review included parents of 2 to 5 year old children; two papers recruited both mothers and fathers (Haycraft and Blissett., 2012; Powell et al., 2017) and four papers recruited mothers only (Hankey et al., 2016; Hughes et al., 2016; Jansen et al., 2012; Rodgers et al., 2013). Due to the nature of the review looking at PFS and feeding practices, no other caregiver types were included. The mean age of parents found within the research were 33.4 years old (SD=4.75) range 31.37 to 37 years old, based on data from the five studies. The mean age of the children across the six studies was 3.87 years old (SD=0.65) range 2.03 to 4.78 years old.

Only two of the papers reported ethnicity of the participants (Hankey et al., 2016; Powell et al., 2017) with 77.31% included participants categorised as Caucasian/white and 22.69% other. Two papers (Haycraft & Blissett, 2012; Jansen et al., 2012) reported participants were from a high economic status area, and ethnicity representing the general consensus of the area although not specifying the participant ethnicity within the paper. One paper discussed immigration status in the USA although not directly ethnicity (Hughes et al., 2016), and another study did not report ethnicity at all (Rodgers et al., 2013). Haycraft and Blissett (2012) report that they did not report the ethnicity, but state the study served primarily white neighbourhoods. Four out of the six studies reported marital status (Hankey et al., 2016; Haycraft & Blissett, 2012; Hughes et al., 2016; Powell et al., 2017) with a total percentage of 82.02% married or co-habiting and 17.98% single.

Table 3: Table of Pooled Study Characteristics

Study Characteristics	Means / Frequencies
Participant characteristics	
Parents	
Parent Gender (% Female)	95.7%
Parent Married / Co-habiting	82.02%
Parent Ethnicity White Caucasian	77.31%
Mean number of parents	677.2
Median number of parents	191.5
Sum of number of included parents	4063
Range of number of included parents	96 - 3157
Number of studies	6
Mean Age	33.4
Median Age	33.7
Mean age range	31.37 - 37
Children	
Child Gender (% Female)	49.3%
Mean number of children	669.2
Median number of children	191.5
Sum of number of included children	4015
Range of number of included children	48 - 3157
Number of studies	6
Mean Age	3.71
Median Age	3.89
Mean Age Range	2.03 – 4.78
Study Characteristics Study Setting	
Study design	
Number of Cross-sectional Studies	4

Number of Longitudinal Studies	2
Setting	
USA	4
UK	1
Netherlands	1
Study Variables / Measures	
Studies examining PFP	5
Studies examining PFS	1
Studies on EOE	6
Studies on EUE	2
Parental Feeding Styles and Feeding Practices Questionnaires	
Child Feeding Questionnaire (Birch et al., 2001)	4
Caregiver's Feeding Styles Questionnaire (Hughes et al., 2005)	2
Parent Feeding Style Questionnaire (Wardle et al., 2002)	1
Comprehensive Feeding Practices Questionnaire (Musher-Eizenman & Holub, 2007)	1
Control Over Eating Questionnaire (Ogden et al., 2006)	1
Parental Feeding Questionnaire (Baughcum et al., 2001)	1
Feeding Practices and Structure Questionnaire (Jansen, Mallan, Nicholson & Daniels, 2014)	1
Children's Emotional Eating Questionnaires	
Children's Eating Behaviour Questionnaire (Wardle, Guthrie, Sanderson & Rapoport, 2001)	6

Four studies (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2016; Rodgers et al., 2013) used the Child Feeding Questionnaire (CFQ) , with two using the Child Feeding Questionnaire (CFQ) solely (Haycraft & Blissett, 2012; Jansen et al., 2012), and two papers using it in conjunction with the Caregiver's Feeding Styles Questionnaire (CFSQ; Hughes et al., 2016) and the Parental Feeding Questionnaire (PFQ; Rodgers et al., 2013). The remaining two papers did not use the Child Feeding Questionnaire (CFQ) but instead used the Caregiver's Feeding Styles Questionnaire (CFSQ; Hankey et al., 2016) and the Feeding Practices and Structure Questionnaire (FPSQ; Powell et al., 2017). See Table 3 for a breakdown of the questionnaires used. Although allowing all measures of EE, EOE and EUE in the inclusion criteria, in all of the six papers, preschool aged children's EE was measured using the Children's Eating Behaviour Questionnaire (CEBQ). See Table 4 for full study characteristics.

With regards to PFS subscales used in two studies; both examined the *authoritarian*, *indulgent* and *authoritative* PFS (Hankey et al., 2016; Hughes et al., 2016) and one study additionally examined *uninvolved* feeding style (Hankey et al., 2016). With regards to the parental feeding practice subscales used across the five studies; four studies examined both *Restriction* and *Monitoring* (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012; Rodgers et al., 2013), three examined *Pressure to Eat* (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012), two examined *Instrumental Feeding* / *Food as a Reward* (Rodgers et al., 2013; Powell et al., 2017), and one paper examined *Overt / Covert Control*, and *emotional feeding* (Rodgers et al., 2013).

Table 4: Summary of Study Characteristics

Author & Country	Study Design	Parental Feeding Styles or Feeding Practices	Category	Parent Characteristics (age, ethnicity, weight)				Child Characteristics (age, weight)			Validated Parental Feeding Measure(s)	Validated Child EE Measures and Subscales	Main Findings (See Table 3 for Correlation and P Values)
				Sample	Parent Mean Age in Years (SD)	Mean BMI (SD)	Ethnicity / Other	Children (N =) and Gender	Child Mean Age in Years (SD)	Mean BMI (SD)			
Hankey and colleagues (2016), USA	Cross-sectional study	Parent Feeding Styles	Authoritative Authoritarian Indulgent Uninvolved	104 Mothers	32.69 (4.50)	Mothers 26.6 (7.2)	89.42% Caucasian	104 children 53 Female 51 Male	3.78 Years (0.70)	NR	CFSQ	CEBQ EOE	Study suggests a link between EOE in the presence of an uninvolved maternal feeding style.
Haycraft & Blissett (2012), UK	Cross-sectional study	Parental Feeding Practices	Monitoring Restriction PTE	96 Parents; 48 Mothers 48 Fathers	Mothers 35 (4.28) Fathers 37 (5)	NR	NR	48 children Gender NR	42 Months (9.00)	BMI SDS 0.02 (SD 1.73)	CFQ	CEBQ EOE EUE	Maternal monitoring predicted by lower levels of children's EOE. Paternal monitoring predicted by lower levels of children's EUE. Maternal restriction predicted by higher levels of children's EOE.
Hughes and colleagues (2016), USA	longitudinal study	Parental Feeding Styles and Parental Feeding Practices	Monitoring Restriction PTE	129 Mothers	32.01 (6.68)	NR	(Immigrant status) USA 15.5% Mexican 64.3% Central American 20.2%	129 children 58 Female 71 Male	4.78 Years (0.46)	BMI categories Normal = 48.8% Overweight = 21.7% Obese = 29.5%	CFSQ & CFQ	CEBQ EOE	Regarding parental feeding practices, EOE was positively associated with higher level of restrictive feeding practices in mothers. Regarding parental styles, an indulgent parenting feeding styles was negatively associated with emotionally overeating in children.

Jansen and colleagues (2012), Netherlands	Cross-sectional study	Parental Feeding Practices	Monitoring Restriction PTE	3,157 Mothers	NR	Mothers 24.4 (4.1) Fathers 25.2 (3.3)	NR	3,157 Children 1575 Female 1582 Male		Underweight = 13% Normal = 78% Overweight = 8% Obese = 2%	CFQ	CEBQ EOE EUE	Significant negative correlation between parental monitoring practices and EOE in children. Both restrictive and PTE feeding practices positively associated with EE in preschool children.
Powell and colleagues (2017), USA	Cross-sectional study	Parental Feeding Practices	Use of Food as Reward	254 Parents 173 Mothers 81 Fathers	31.37 (5.48)	NR	65.2% Caucasian	254 children 121 Female 133 Male	4.17 Years (1.01)	NR	FPSQ	CEBQ EOE	Using food as a reward for behaviour was positively correlated with EE in preschool aged children.
Rodgers and colleagues (2013), USA	Longitudinal study	Parental Feeding Practices	Control Restriction Instrumental Feeding Emotional Feeding Monitoring	323 Mothers	35 (0.37)	NR	NR	323 children Gender NR	2.03 Years (0.37)	NR	CFQ & PFQ	CEBQ EOE	There was a significant positive relationship between emotional feeding and EE behaviours in preschool aged children.

Key: NR = Not recorded in the Paper; Questionnaires: = CFQ - Child Feeding Questionnaire (Birch et al., 2001); CFSQ - Caregiver's Feeding Styles Questionnaire (Hughes et al., 2005); PFSQ - Parent Feeding Style Questionnaire (Wardle et al., 2002); CFPQ - Comprehensive Feeding Practices Questionnaire (Musher-Eizenman & Holub, 2007); COEQ - Control Over Eating Questionnaire (Ogden et al., 2006); PFQ - Parental Feeding Questionnaire (Baughcum et al., 2001); FPSQ - Feeding Practices and Structure Questionnaire (Jansen et al., 2014); CEBQ - Children's Eating Behaviour Questionnaire (Wardle et al., 2001); DEBQ - Dutch Eating Behaviour Questionnaire (Van Strein et al., 1986).

Table 5: Correlations between Parental Feeding Practices and Parental Styles and EOE Behaviours

Study	Parental Styles				Parental Feeding Practices						
	Authoritative	**Authoritarian**	**Indulgent**	**Uninvolved**	**Instrumental Feeding**	**Emotional Feeding**	**Control**	**Use of Food as a Reward**	**Monitoring**	**Restriction**	**Pressure to Eat**
Hankey et al., 2016	0.22* p<0.05	-0.11 (ns)	-0.12 (ns)	-0.03 (ns)							
Haycraft & Blissett, 2012									Mothers: -0.357* p<0.05 Fathers: -0.217 (ns)	Mothers 0.385** p<0.01 Fathers 0.091 (ns)	Mothers 0.3* p<0.05 Fathers 0.049 (ns)
Hughes et al., 2016	0.14 (ns)	0.14 (ns)	-0.20* p<0.05						-0.11 (ns)	0.18* p<0.05	-0.14 (ns)
Jansen et al., 2012									-0.144*** p<0.001	0.148*** p<0.001	0.082*** p<0.001
Powell et al., 2017								0.64*** p<0.001			
Rodgers et al., 2013					Time 2: 0.11 (ns)	Time 2: 0.35*** p<0.001	Overt Control Time 2: -0.1 (ns) Covert control Time 2: -0.04 (ns)		Time 2: -0.16* p<0.05	Fat Restriction Time 2: 0.1 (ns) Weight Restriction Time 2: 0.12' p<0.1	'Pushing to eat more: Time 2: 0.03 (ns)

Table 6: Correlations between Parental Feeding Practices and Parental Styles and Emotional Under-eating Behaviours

Study	Parental Styles				Parental Feeding Practices						
	Authoritative	Authoritarian	Indulgent	Uninvolved	Instrumental Feeding	Emotional Feeding	Control	Use of Food as a Reward	Monitoring	Restriction	Pressure to Eat
Haycraft & Blissett, 2012									Mothers: --0.023 (ns) Fathers: -0.397** p<0.01	Mothers 0.299* p<0.05 Fathers 0.059 (ns)	Mothers 0.403** p<0.01 Fathers 0.067 (ns)
Jansen et al., 2012									0.001 (ns)	0.112*** p<0.001	0.160*** p<0.001

Table 7: Meta-analysis of Parental Predictors of Emotional Eating Behaviours (4 unique studies included)

Predictors	No of Studies	No of Predictors	Total Sample Size	Effect Size	95% CI		Z Score	Q Score
					Low	High		
Monitoring	4	5	3705	-0.148 P<0.001	-0.179	-0.116	-9.048	2.784
Restriction	4	5	3543	0.149 p<0.001	0.117	0.182	8.947	3.622
Pressure To Eat	3	4	3382	0.054 P = 0.472	-0.094	0.199	0.712	8.536

3.3.2. Parental Feeding Styles

Two studies examined 'PFS' in terms of four distinct styles of parenting (authoritative, authoritarian, indulgent and uninvolved). The first study reported results of all four PFS (Hankey et al., 2016), whereas the second study reported on all but uninvolved parental feeding style (Hughes et al., 2016). Across the two papers, only two significant results were found within the unadjusted results within the correlation matrix of the studies, finding a positive correlation between *authoritative* PFS and emotional overeating (Hankey et al., 2016), and a negative correlation between *indulgent* PFS and EOE (Hughes et al., 2016). One study is cross-sectional (Hankey et al., 2016) and one is longitudinal (Hughes et al., 2016), however this review has retrieved just cross-sectional data out of the longitudinal study due to the age range of the children being too old to be including in the systematic review.

Hankey and colleagues (2016) reported a significant positive correlation between *authoritative* parental feeding style and EOE (0.22, p<0.05), however this was based purely on unadjusted results within the correlation matrix, and once adjusted for the

results may be different. In addition, a non-significant negative relationship was found between *authoritarian*, *indulgent* and *uninvolved* PFS and EOE respectively at -0.11, -0.12, and -0.03, $p>0.05$.

Hughes and colleagues (2016) reported a significant negative correlation between *indulgent* parental feeding style and EOE (-0.20, $p<0.05$), however this was based purely on unadjusted results within the correlation matrix, and once adjusted for the results may be different. They also found a non-significant positive correlation between *authoritative* and *authoritarian* PFS and EOE respectively at 0.14 and 0.14 $p>0.05$.

In summary, both papers found a positive correlation between *Authoritative* PFS and EOE behaviours, yet only one reached significance (Hankey et al., 2016). Similarly, both papers found a negative correlation between *Indulgent* PFS and EOE behaviours, yet only one received significance (Hughes et al., 2016). Mixed findings were shown with *Authoritarian* PFS, with a non-significant negative and positive correlation with EOE behaviour respectively (Hankey et al., 2016; Hughes et al., 2016). Lastly, only one paper (Hankey et al., 2016) reported a non-significant finding for *uninvolved* parental feeding style and EOE behaviours.

3.3.3. Parental Feeding Practices

Five studies examined the relationship between PFP and EE behaviours; with all five studies examining on EOE behaviours. Two of these studies examined both EOE and undereating behaviours. Both Hughes and colleagues (2016) and Jansen and colleagues (2012) measured mothers' feeding practices, whereas Haycraft and Blissett (2012) measured both mothers and fathers' feeding practices. Two studies looking at

PFP were longitudinal in nature (Hughes et al., 2016; Rodgers et al., 2013), however this review has retrieved just cross-sectional data out of these with Hughes and colleagues (2016) is from Time 1, and Rodgers and colleagues (2013) from Time 2, due to the age ranges of the children being excluded in the systematic review.

Restriction, *PTE*, *UFAR*, and *Instrumental and Emotional Feeding* were associated with a higher level of EOE behaviours with values ranging from 0.082 to 0.385 ($p<0.05$). Conversely, *Monitoring* and *overt / covert control* were associated with a lower level of EOE behaviour, with monitoring values ranging from -0.144 to -0.357 ($p<0.05$), and findings of overt / covert control were between -0.04 and -0.1 but were non-significant.
In addition, *Restriction* and *PTE* were associated with higher levels of EUE behaviour with values ranging between 0.112 and 0.403 ($p<0.05$), and *Monitoring* was associated with a lower level of EUE behaviour at -0.397 ($p<0.01$).

Regarding EOE; in summary, all of the four papers measuring the parental feeding practice *Restriction* found a positive correlation with EOE behaviours, with three papers having some data reaching significance (Haycraft & Blissett, 2012; Hughes et al., 2016, Jansen et al., 2012). Regarding *PTE*, three of the four papers found a positive correlation with EOE behaviours, with two of these having some data reaching significance (Haycraft and Blissett, 2012; Jansen et al., 2012). Focusing on *Monitoring*, all four papers found a negative correlation with EOE, with three having some data reaching significance (Haycraft and Blissett, 2012; Jansen et al., 2012; Rodgers et al., 2013). *Instrumental feeding*, *Emotional Feeding*, *Control* and *UFAR* were only measured by one paper, with both *Emotional Feeding* (Rodgers et al., 2013) and *UFAR* (Powell et al., 2017) showing a positive correlation with EOE behaviours.

Regarding EUE; in summary, both papers found a positive correlation between *Restriction* and *PTE* and EUE behaviours, with both having some data reaching significance (Haycraft & Blissett, 2012; Jansen et al., 2012). Mixed findings were shown with *Monitoring* PFP, with Haycraft and Blissett (2012) finding a significant and non-significant negative correlation with EUE behaviours, and the other finding a non-significant positive correlation (Jansen et al., 2012) and a non-significant positive and positive correlation with EOE behaviour respectively (Hankey et al., 2016; Hughes et al., 2016). Lastly, only one paper (Hankey et al., 2016) reported a non-significant finding for *uninvolved* parental feeding style and EOE behaviours. Each parental feeding practice and its relationship with EOE and EUE is now described in more detail.

3.3.3.1. Directive Feeding Practices

3.3.3.1.1. Pressure to eat

Three papers in this review focused on PTE and EOE behaviour (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012). Of these, two reported a significant positive correlation between PTE and preschool aged children's EOE behaviours with 0.3 $p<0.05$, and 0.0082 $p<0.001$ respectively (Haycraft & Blissett, 2012; Jansen et al., 2012). One study reports a negative correlation between PTE and EOE although this did not reach significance (Hughes et al., 2016). Two studies reported a significant association with PTE and EUE behaviours (Haycraft & Blissett, 2012; Jansen et al., 2012) with both studies finding PTE by mothers associated with higher levels of EUE behaviours, with 0.160 and 0.463 $p<0.01$ respectively (See Table 6). Haycraft and Blissett (2012) measured both mothers and fathers restrictive feeding practices finding only significant for mothers only at 0.299 $p<0.05$. A meta-analysis (figure 5) was

conducted PTE and EOE was tested, however the results were non-significant (r= 0.054, p>0.05).

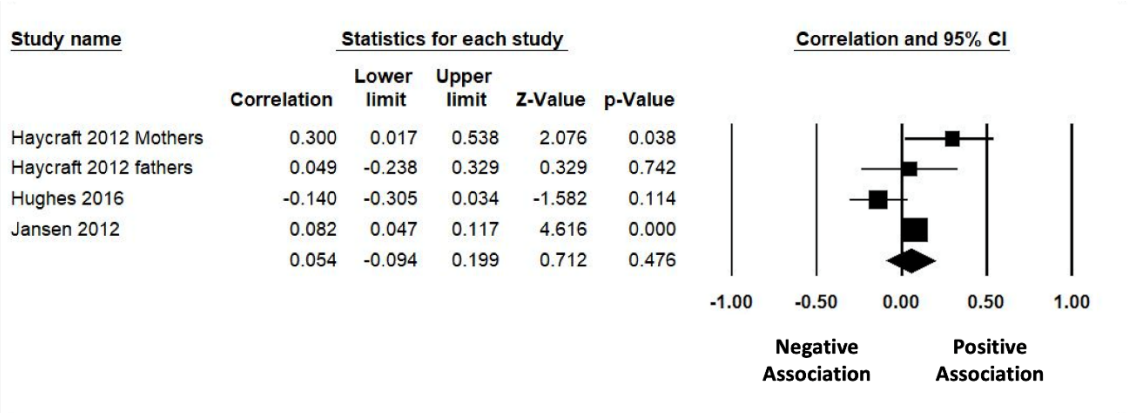

Figure 5: Meta-analysis Forest Plot for Pressure to Eat and Emotional Overeating

3.3.3.1.2. Restriction

Four studies examined the relationship between restriction and EOE behaviour (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012), with one study examined two separate measures of restriction; fat restriction and weight restriction (Rodgers et al., 2013). Three studies demonstrated a significant positive relationship between restriction and EOE with ranges between 0.148 and 0.385 p<0.05 (Haycraft and Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012), with Haycraft and Blissett (2012) finding this relationship significant in mothers only. Two studies found an association between restriction and EUE behaviours (Haycraft & Blissett, 2012; Jansen et al., 2012), finding 0.299 and 0.112 p<0.05 respectively (See Table 6). Haycraft and Blissett (2012) only found a significant relation for mothers, with fathers' restriction and undereating behaviour non-significant.

A meta-analysis was conducted on Restriction and found a small but significant positive relationship between Restriction and EOE behaviours (r=0.149, p<0.001). The effect size was small according to guidelines developed by Cohen (1992). The test for residual heterogeneity for restriction meta-analysis was non-significant for both Restriction (Q = 3.62, df = 4, p = 0.46), thus we conclude the studies were homogenous.

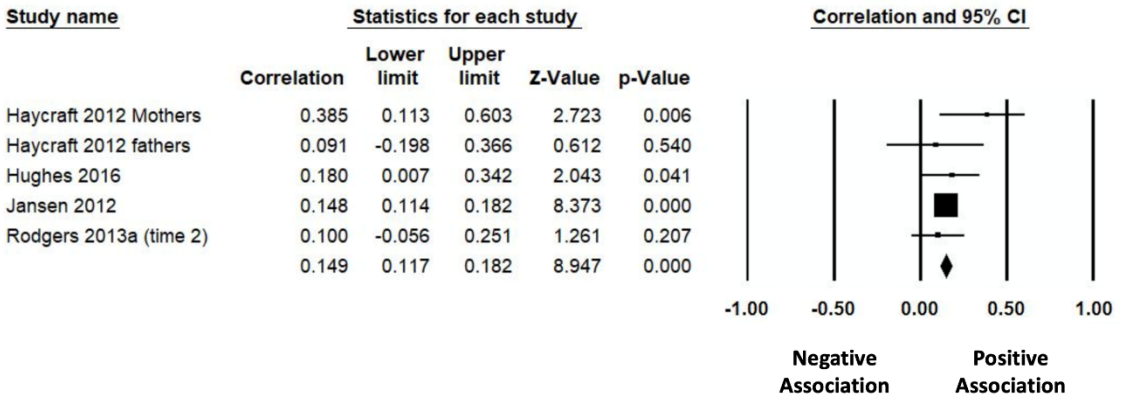

Figure 6: Meta-analysis Forest Plot for Restriction and Emotional Overeating

3.3.3.1.3. Overt/Covert Control

Rodgers et al.,(2013) was the only paper identified in this review that examined the parental feeding practice specifically defined as control, although other controlling feeding practices although not directly classified as 'overt / covert control' but within the umbrella of 'control' are also reported as; monitoring, restriction, and PTE. Rodgers (2013) found that EOE was negatively correlated with mothers' Overt Control (-0.1, p>0.05), though this finding was non-significant.

3.3.3.1.4. Use of Food as a Reward

Use of food as a reward (UFAR) is defined as a non-nutritive approach to providing children with food for a non-hunger basis as a reward for such reasons as rewarding a child for completing a particular task (Powell et al., 2017). The one study (Powell et al., 2017) looking at UFAR within this review reported a significant positive relationship between UFAR and EE behaviours (0.64 $p<0.001$) indicating higher levels of UFAR were associated with EOE. When self-regulation was added into a simple mediation model alongside parents UFAR, child self-regulation acted as a partial mediator between the relationship and thus reduced the effect with UFAR and EOE behaviours, although the coefficient was still significant (0.54 $p<0.001$).

3.3.3.1.5. Instrumental/Emotional Feeding

Rodgers et al. (2013) reported a positive correlation between emotional feeding and EOE, assessed using a longitudinal study design (0.35 $p<0.001$). Even when controlling for time 1, emotional feeding still showed a significant positive correlation between emotional feeding and EOE (0.29 $p<0.001$). A positive correlation between instrumental feeding and EOE was also found (0.11, $p>0.05$), although this did not reach significance (Rogers et al, 2013).

3.3.3.2. Non-Directive Feeding Practices

3.3.3.2.1. Monitoring

Four studies reviewed in this paper examined 'monitoring' (Haycraft & Blissett, 2012; Hughes et al., 2016; Jansen et al., 2012; Rodgers et al., 2013). A significant negative correlation between parental use of monitoring on children's eating and EOE was found in three studies with range of correlations between -0.144 and -0.357, $p<0.05$ (Haycraft and Blissett 2012; Jansen and colleagues 2012; Rodgers and colleagues (2013). Hughes and colleagues (2016) also found a negative but non-significant result at -0.11 ($p>0.05$; Hughes et al., 2016). Haycraft and Blissett (2012) assessed mothers and fathers separately and found that both mothers' and fathers' monitoring practices were linked to a negative correlation with EOE, yet only mothers' monitoring practices were the ones to be significantly associated (-0.357 $p<0.05$). Two papers found an association with EUE behaviours (Haycraft & Blissett, 2012; Jansen et al., 2012). Only Haycraft and Blissett (2012) reported a significant negative correlation between monitoring and EUE behaviours, and in fathers only (-0.397, $p<0.01$) with Jansen and colleagues (2012) finding a non-significant result (0.001, $p>0.05$).

A meta-analysis was conducted separately on the feeding practice Monitoring. A small but significant negative relationship between monitoring feeding practices and EOE behaviour was found ($r=-0.148$, $p<0.001$). The effect size was small according to guidelines developed by Cohen (1992). The test for residual heterogeneity for restriction meta-analysis was non-significant for Monitoring ($Q = 2.78$, $df = 4$, $p = 0.60$), thus we conclude the studies were homogenous.

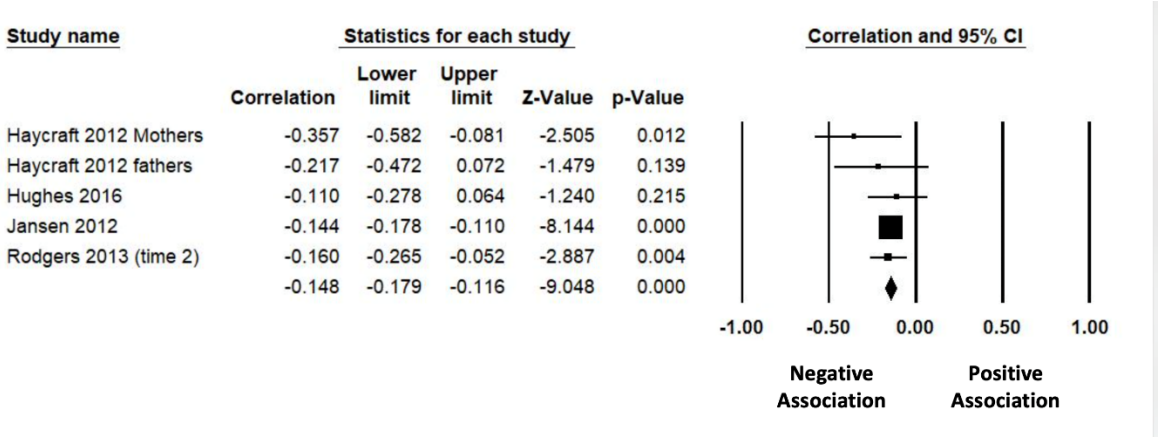

Figure 7: Meta-analysis Forest Plot for Monitoring and Emotional Overeating

3.3.3.2.2. Covert Control

Rodgers et al. (2013) was the only paper identified in this review that examined the parental feeding practice specifically defined as control, although other controlling feeding practices under the umbrella term of 'control', such as monitoring, restriction, and PTE, are also reported separately in this review. Rodgers (2013) found that EOE behaviours ere negatively correlated with mothers' Covert Control (-0.04, $p>0.05$) though this finding was non-significant.

3.4. Discussion

3.4.1. Summary of Main Findings

The aim of this review was to systematically review the existing evidence to identify the types of PFS and feeding practices used by parents and their relationship with EE behaviours in preschool aged children. The systematic review and meta-analysis found restriction positively associated with children's EOE behaviours, although with the

findings explaining 14.9% of the variability so many other factors may be involved in this relationship. Similarly with the finding that monitoring feeding practices were negatively associated with children's EOE, although again the findings explained only 14.8% of the variability so many other factors may be involved in this relationship. In the present review, a small but significant relationship between some PFS and EE behaviours were found; *authoritative* PFS were associated with higher levels of EOE behaviour whilst *indulgent* PFS were associated with lower levels of EOE behaviour. How it must be noted that, in line with the research protocol, the PFS findings reported were based purely on unadjusted results within the correlation matrix, and once adjusted for the results may be different. It is difficult to draw conclusions regarding the relationship between *authoritarian* and *uninvolved* PFS due to the limited data available to synthesise in the current review.

The present review found that the use of restriction, PTE, emotional feeding and *UFAR* feeding practices were associated with higher levels of EOE, and *monitoring* with lower levels of EOE. Furthermore, *PTE* and *restriction* were found to be associated with higher levels of EUE behaviours, whilst *monitoring* was associated with lower levels of EUE. The results of the meta-analysis found a small but significant positive relationship between *restriction* and EOE, and a statistically significant negative relationship between *monitoring* and EOE behaviours. Due to the limited data available regarding the relationship between both *UFAR* and *overt / covert control* feeding practices on EOE behaviours, this review is unable to draw conclusions of their relationship with EE overeating behaviours.

In summary, the current review identified four of the six papers being cross-sectional in nature. This is further discussed within the papers as the authors discuss the inability to infer causality within the data (Hankey et al., 2016; Haycraft & Blissett, 2012, Jansen et

al., 2016 & Powell et al., 2017). They instead discuss the strengths regarding the snapshot in time, allowing further research to be achieved with the findings of a relationship between variables. In addition to the cross-sectional studies, two papers within this review are longitudinal by nature. This research design helps to establish causality, however the data delineated from these studies represented a cross-sectional snapshot of the particular time due to the length of time between the two parts to the study being above and beyond the age limitation within this review.

3.4.2. Links to Previous Literature

This review investigates an important area in eating behaviour research. Existing literature suggests that PFS and practices play an important part in the development of children's maladaptive eating behaviours, and specifically the development of EE behaviours (Herle et al., 2017; Shloim et al., 2015; Litchford, Roskos & Wengree, 2020).

Focusing first on PFS, the present review found *authoritative* and *indulgent* PFS were associated with higher and lower levels of EOE respectively. Previous research has shown mixed results with these feeding styles, although the majority discussed authoritative as a protective factor and indulgent as a non-protective factor in such maladaptive eating behaviours. As discussed in Section 1.3.2, parents with an *authoritative* feeding style actively encourage their child to eat, but using highly supportive behaviours that are sensitive to the needs of the child. Our findings of a positive association between *authoritative* and EOE are partially supported by a systematic review by Berge (2009) who found parents who are high on the scales of demandingness and control, where *authoritative* feeding style sits, is associated with child food approach behaviours such as eating in the absence of hunger (EAH). It must

be noted that EAH is purely a laboratory based measure, and although EE may manifest as a construct of this, the generalisability between the two is yet to be assessed (Langisan et al., 2015).

Indulgent feeding styles have had similar mixed findings across the literature, with cross-sectional studies finding indulgent feeding styles are associated with higher BMI status in children (Hughes et al., 2008; Hughes et al., 2011; Vollmer et al., 2015). Two papers in this review however found a negative correlation between *indulgent* parenting style and EOE, meaning that children of parents who implement *indulgent* parenting styles are more likely to exhibit lower levels of EOE behaviours than parents who do not. Hughes and colleagues (2008) discuss how indulgent parents will not place any demands their children in terms of what foods or how much to eat and instead cater to the preference of the child. With this in mind, children's predispositions for food fussiness may be suggested, especially during preschool years. Such food avoidant behaviours could may suggest the negative correlational findings between indulgent feeding styles and EOE in this review. This is supported by previous cross-sectional study by Goodman and colleagues (2020) finding parents with permissive or indulgent feeding styles were more likely to find high levels of FF in their preschool aged children.

Several studies within the literature have reported that *indulgent* parenting style and feeding styles are associated with higher weight status in preschool children, although do not discuss the relationship between this and EE (Blissett & Haycraft, 2008; Hughes, Shewchuk, Baskin, Nicklas & Qu, 2008; Frankel et al., 2014; Hughes et al., 2011). This is further supported by Frankel and colleagues (2014) whose study found that *indulgent* parenting feeding lessens children's ability to self-regulate energy intake, leading to a higher weight status. Despite the potential link between *indulgent* parental styles and child weight status, the present review, however, demonstrates that there is a lack of research investigating the contribution of these styles to EE behaviours in preschool

children. This is an important omission in the literature as previous research has also demonstrated a relationship between EE behaviour and child weight status, and so future research needs to be considered in this area.

The challenges within this research are the blurring of lines between parenting styles and PFS. A review by Topham and colleagues (2011) found a negative correlation (-0.16, $p<0.01$) between *authoritative* parenting styles and EOE behaviours, however they reviewed general parenting styles, not specifically stating the use of PFS, although discussed general parenting styles within a feeding context. This suggests that it may be difficult to compare the findings of this review in comparison to others regarding the PFS, as other reviews have used parental styles, suggesting a more general parenting style although discussing it within the feeding nature.

Regarding PFP associated with EOE behaviour within the current review, findings of the current review support previous literature; with higher levels of EOE being associated with higher levels of *Restriction* (Birch, Fisher & Davison, 2003), *UFAR* (Farrow et al., 2015), and *Emotional Feeding* (Steinsbekk, Barker, Llewellyn, Fildes & Wichstrøm, 2018; Ozdemir & Bilgic, 2018), whilst *Monitoring* (Bennett & Blissett, 2016; Faith et al., 2004) was found to be associated with lower levels of EOE behaviours or weight status in preschool aged children. Furthermore, meta-analysis demonstrated a statistically significant relationship between *restriction* and higher levels of EOE in preschool aged children, and *monitoring* and lower levels of EOE in preschool aged children. Previous research suggests that PTE is associated with child food avoidant behaviours and lower weight status. For instance, Farrow, Galloway & Fraser (2009) found that children of parents who reported using more *PTE* feeding practices demonstrated more food avoidant eating behaviours such as slower to eat, FF, and EUE. *PTE* was positively associated with food avoidant behaviours such as FF and EUE, and negatively

associated with food approach behaviours such as EF and EOE. The findings of this review, on the contrary, suggest that *PTE* is associated with a significant increase of both EOE and EUE. This itself is an interesting finding as this relationship between EOE and EUE has been noted with previous research (Jansen, Williams, Mallan, Nicholson & Daniels 2016; Haycraft & Blissett, 2012; Herle et al., 2017), whereby although the food approach behaviour EOE reflects the opposite of the food avoidant behaviour EUE, they are both seen to positively correlate. This could suggest that although EOE and EUE are, by definition, different eating behaviours, there may be an important relationship between them and the development of EE as a whole in preschool aged children.

3.4.3. Strengths and Limitations

This is the first paper, to our knowledge, that has attempted to quantitatively synthesise the evidence regarding the relationship between PFS, PFP and preschool children's' EE behaviour. Previous reviews in this area have examined PFP and feeding styles, yet have not specifically focused on EE as an outcome measure (Shloim et al., 2015; Patel, Karasouli, Shuttlewood & Meyer, 2018; Collins, Duncanson & Burrows, 2014). Thus the current review fills an important gap in the literature, illuminating important factors that should be researched further, to highlight the potential PFS and PFP used by parents with children, and it's association with the establishment of EE behaviours in the early years. Another strength to this review is that we have quantitatively synthesised data from included studies using meta-analysis methodology, therefore statistically integrating the data to show meaningful and significant interactions between the findings of the papers. We have demonstrated, via meta-analyses, that *restriction* is significantly positively associated, and *monitoring* significantly negatively associated with EOE behaviours in preschool aged children. Thus, the findings of the present review can be

utilised to inform future research, focusing on particular PFP associated with both children's EUE and EOE. Focusing on this area of research, one may be able to distinguish the PFS and PFP salient with in the feeding environment with this cohort of preschool children, and its relationship with EE behaviours.

Another strength of this review is the ability to synthesis the data from preschool aged children between the ages of 2 to 5 years of age. EE is suggested to develop in childhood and increase with age (Ashcroft, Semmler, Carnell, Van Jaarsveld & Wardle, 2008), and has been shown to be present in children around 5 to 7 years of age (Farrow et al., 2015). Research however suggests that EE may develop in children before this age, for instance Rodgers and colleagues (2014) reported findings EOE in children as young as 2 years old EUE behaviours have been demonstrated in children between 3 to 5 years of age (Blissett, Farrow & Haycraft, 2019). Previously, studies who find non-significant results regarding preschool children and EE until around 5 to 7 years old, discuss the difficulty in capturing the behaviours quantifiably due to the age in which EE develops (Farrow et al., 2015; Blissett et al., 2010). Therefore, the current study adds to the existing literature by reviewing the research that examines EE in preschool children, despite evidence showing the development at this age.

The current review highlights the challenges experienced when researchers attempt to amalgamate and synthesise data in this area to ascertain the relationship between PFS, feeding practices and EE behaviour. Within six papers discussed in this review, seven unique questionnaires were used in an attempt to measure PFP, each with similar or differing subscales and feeding constructs totalling 38 individual measurable items. Furthermore, the most commonly used questionnaire, the Child Feeding Questionnaire (CFQ) was used within four out of the five papers examining PFP. Although the CFQ incorporates several PFP, it does not capture a wider range of PFP such as modelling

practices, teaching wider elements control and UFAR or behaviour modification. Therefore, research using the CFQ only is limited to the subscales in which the questionnaires revolves, specifically; *restriction*, *PTE* and *monitoring*. Some of the other practices can be seen within the Comprehensive Feeding Practices Questionnaire (CFPQ), therefore both questionnaires could be used to capture a wider range of PFP, or combined in future research to create a common conceptual model (Vaughn et al., 2016). A recent systematic review by Patel et al. (2018) examined "Food Parenting Practices" and argued that their inconsistent results within their findings may have been due to other parental practices and variables that were not sufficiently captured by the use of the CFQ measures. It is possible, therefore, that inconsistent findings in practices such as '*PTE (PTE)'* and EOE in the current review may be due to other measures or variables within the studies, such as modelling of behaviours or additional controlling feeding practices not discovered in the findings.

As mentioned previously, the cross-sectional nature of the research precludes the ability to infer causality but instead creates a snapshot in time regarding the behaviours. Nevertheless, the included studies did include relatively moderate sample sizes, with all but one of the studies including over 100 participants (Haycraft & Blissett, 2012). A larger sample size holds more power within its findings, with studies within this review up to 3,157 mothers and children. It must be noted though that sample size does not change the issue regarding cross-sectional data, with the research and findings still lacking the ability to infer causality. In addition to the cross-sectional studies, two papers within this review are longitudinal by nature. However, it must be stressed that the data retrieved from the longitudinal studies were still cross-sectional data from one time point. This is due to the time frame of the studies meaning he child age on the next time frame would have fallen out of the studies remit.

The findings of this review should be interpreted with caution. Due to the limited number of papers focusing on individual PFS and PFP, between a minimum of one and a maximum of either two or four studies discussing a feeding style or practice at one time respectively, the review can only synthesise and conclude the findings form the small number of papers that were captured within its criteria.

Furthermore, limitations inherent to the studies included in the review mean that the findings of the current review should be interpreted with caution. Firstly, participants within the included studies were predominantly mothers, even when the research discussed 'parental' feeding practices. It must be noted however that where fathers were analysed as a separate population, Haycraft and Blissett (2012) found the results regarding EOE were all non-significant, and only one of the three results regarding EUE (monitoring) with fathers reaching significance. Within the paper, Haycraft and Blissett (2012) discussed this finding between maternal and paternal feeding practices and concluded that fathers have a simpler set of predictors regarding their feeding practices, particularly with children's slowness in eating and EUE, whereas mothers feeding practices are predicted by a more complex set of predictors. This may help to suggest why findings of mothers and fathers are varied, as if feeding practices used and eating behaviours seen are different, it may help to explain why many studies just use mothers as their parental cohort. In addition, the majority of the participants in the included studies were Caucasian, and from a higher economic socio-economic status area, so the generalisability of the findings is restricted from other ethnicities. Research has previously discussed the importance of ethnicity within feeding practices, with previous research demonstrating that Black and Afro-Caribbean parents use higher levels of *restrictive* feeding practices and lower levels of *monitoring*, and their children showing more food approach behaviours such as EOE (Blissett & Bennett, 2013). Including participants from a wider range of ethnicities and socio-economic statuses in future

research would enable to wider understanding of the feeding practices used within the wider population.

Future research should look towards standardising measures to find a ‘gold standard’ for PFP within eating behaviour research. In addition, the findings from the six included papers relied entirely on parent self-report measures, with parents completing questionnaires about themselves and their preschool aged child. In addition to the parent report questionnaires, a third of the papers measuring height and weight that were self-reported by the mothers. This is important to note as previously research has highlighted that mothers are more likely to underestimate the weight of their child than overestimate it (Hankey et al., 2016). With not only with the height and weight but PFS and PFP within the studies are also measured via self-report in all six of the studies, it is therefore possible that mothers are unable to accurately assess their own use of PFP in the same way. Therefore, we would recommend future research examines PFP not only as a self-report measure, but also look at additional measures such as observational measures where the possibility allows. It is more likely for self-report than other objective measures of parenting to have errors introduced, such as the need to have social desirability biases associated with self-awareness. However, studies have shown that CFSQ has been validated by observations in the home, supporting the argument that self-report measures do capture important elements of how a parent interacts with their child. Researchers must be aware however that there may be an element of bias in parents self-report, as parents may fill in questionnaires how they believe the researcher wants to find, instead of how they actually feel (Hughes et al. 2011).

3.4.4. Conclusion

This review is the first in our knowledge to assess the contribution of PFS, feeding practices to EOE and EUE behaviours in preschool aged children. This review demonstrates that there are contradictory findings across existing research in this area, potentially due to the varied measures and differing definitions of practices used in research. Therefore, future research should seek to create a definitive list of validated identifications and definitions of feeding practices. This would enable a clearer comparison across findings, identify differences in the measures used and the findings found, and build on previous work on to understand development of EE with this young population. A better understanding is needed around the vast number of PFP that have been identified within research, and how they may contribute to the development and prevalence of EE behaviours in young children. In addition, studies measuring PFS and practices lack additional information regarding additional wider ranges of variables that may be relevant to the development of EE in children, such as parents own eating behaviours, and self-regulatory abilities that may impact the feeding situation. This could be addressed with replication of studies with longitudinal research, or replication of cross-sectional research looking at a more generalisable sample and varied parenting and child variables alongside the development of EE. Although this review has mixed findings and a number of limitations within the included studies, it shows small but significant relationships between PFS and practices and EE behaviours in preschool aged children. In addition to this, the meta-analyses show the association between the PFP, in particular *restriction* and *monitoring*, and their relationship with EE behaviours. Although more research is required within this area, and the limited number of studies within this review, this review adds insight into what is known about the relationship between PFS and feeding practices on the development of EOE and EUE within preschool aged children.

4. Quantitative Path Analysis Study "Examining the role of Parent Emotion Regulation and Child Temperament on the use of Feeding Practices with Preschool aged Children's Emotional Eating: a path analysis"

Abstract

A large cross-sectional study (n=1,712) was conducted examining the relationship between parent and child emotionality, parental feeding practices, and emotional eating behaviours in preschool aged children between 3 and 5 years old. A number of measures were analysed using path analysis, including; parents affect in feeding, parents ER, PFP, parents EE, children's temperament and children's eating behaviours including EOE and EUE. Results of the hypothesized model revealed a good fit to the data (33, N = 1712) = 916.02, p<0.001, RMSEA = 0.03, 90%CI [0.02, 0.04], CFI = 0.98, SRMR = 0.02. Results showed that whilst controlling for demographic and confounding variables, significant positive associations were found between both children's EOE and EUE and poor parental ER strategies (0.20 [0.37, 0.04] and 0.15 [0.21, 0.10] respectively), children's FR (0.34 [0.49, 0.19] and 0.19 [0.24, 0.14] respectively), as well as parents' EE (0.18 [0.30, 0.05] and 0.134 [0.18, 0.09] respectively). Results showed positive associations between children's EUE and controlling feeding practices UFAR (0.19 [0.25, 0.13]) and 'PTE' (0.12 [0.17, 0.06])', children's own negative affectivity (0.10 [0.14, 0.07]), parents' negative AF (0.18 [0.21, 0.14]). Negative associations were found between EUE and parents' positive AF (-0.18 [-0.14, -0.21]), and children's enjoyment of food (-0.24 [-0.19, -0.29]). Lastly, positive associations were found EOE and controlling

PFP ‘restriction for weight’ (0.33 [0.59, 0.08]), although the largest of the associations found, this was relatively weak. The findings show LAERS, restriction for weight and children’s FR most salient in the relationship with EOE behaviours, and children’s enjoyment of food most salient in the relationship with EUE behaviours. Other variables such as LAERS, PTE, UFAR, child negative affectivity, and positive and negative affect in feeding reached significance and showed positive and negative relationships with children’s EE in the path analysis, suggesting an interplay between these factors within children’s emotional eating behaviours. Findings from the path analysis highlight a relationship between emotionality and the use of PFP, associated with children’s EE behaviours. This is further explored in the main findings and discussed regarding its practical implications for parents.

4.1. Background

With over a third (34.3%) of our UK children are now classed as having overweight or obesity (POS, 2019), one of the main focuses on childhood obesity is the development of children’s eating behaviours seen around preschool age. As discussed in section 1.2, emotional eating (EE) sits within both the food approach and food avoidant behaviour categories, known as emotional overeating (EOE) and emotional undereating (EUE). The development of EE is an important area for researchers, due to its association with maladaptive eating behaviours and weight change in children. Webber and colleagues (2009) conducting a linear regression analysis with 406 families, finding EOE positively associated with a higher weight status in children of 7 to 9 years old ($B=0.41$, $p<0.0001$). Spence and colleagues (2011) furthered this with the younger age category, conducting a linear trend analysis finding a significant difference between weight status and EOE in 4 and 5 year old children ($F=6.19$, $p<0.01$). Although both of these studies found a

negative relationship between EUE and weight status, the result was non-significant. To investigate this, Jansen and colleagues (2012) produced a large cross-sectional study (n = 4,987) looking at PFP, EE and weight status in 4 year old children. In addition to finding EUE negatively associated with increased weight status in children ($r=-0.102$, $p<0.001$), they found PFP such as PTE was positively associated with EUE ($r=0.160$, $p<0.001$), suggesting a relationship with the development of EUE behaviours. Although it must be noted that within all these studies causality cannot be established, it gives good insight to the relationship between the variables for further exploration to be made.

These PFP have been discussed previously in the systematic literature review and meta-analyses (section 3.3.3), with restriction significantly positively correlating with EOE, and monitoring significantly positively correlating with EUE behaviours. The review found associations with EE in preschool aged children; with positive associations with UFAR, Restriction and PTE with EOE, and PTE and Restriction with EUE . These findings, alongside the complex entwined relationship between EOE and EUE (Herle et al., 2017; Sledden et al., 2008; Vaughn et al., 2016), highlights the idea that other factors that may be involved with these relationships. As discussed in section 1.3, parent behaviours such as PFS, PFP, emotional regulation as well as their own EE behaviours, may individually play a role within the development of children's EE behaviours. With relationships in the literature regarding EE and PFP (Haycraft and Blissett, 2012), parental EE (Tan & Holub 2015), emotional regulation (Bariola et al., 2012), affect in feeding (Rodgers et al., 2014) and child temperament (Tate et al., 2016), how they all may collectively contribute to the development of, or protection against, children's EE has yet to be established. Exploring this complex interplay of factors in such methodologies as a path analysis, would allow the exploration of relationships between variables whilst controlling for all factors.

4.2. Methods

4.2.1. Research Aims

The primary aim is to examine the complex interplay of parental and child emotional factors, specifically; parent ER, parent affect in feeding, and child temperament; parental feeding practices and the development of preschool children's EE.

Specific questions relating to parents own ER and its association with their PFP and their preschool aged child's EE that will be addressed by this study are:

- When controlling for all variables:
    a) What are the most salient strategies and behaviours linked to emotional overeating and undereating in preschool aged children?
    b) Are parental emotionality and parent feeding practices associated with children's eating behaviours?
    c) Is parents own emotionality during feeding associated with preschool children's eating behaviours and children's emotional eating behaviours?
    d) Are parents own emotionality during feeding and their own emotional eating associated with their preschool children's emotional eating behaviours?
    e) Is there an association between child's temperament and the parents' emotionality with children's emotional eating behaviours?

4.2.2. Recruitment

Following ethical approval, the quantitative study began to recruit participants from the non-clinical community population to take part in the studies. The use of non-clinical community populations is growing (Coulthard & Harris 2003), with important implications in findings within parent-child feeding behaviour research. With research ongoing regarding PFP and EE within a laboratory experimental setting (Blissett, Farrow & Haycraft 2019), it is important to also research using non-clinical community based research. Community non-laboratory participants may help to extrapolate findings to the wider population and look toward generalisation of the results within particular cohorts.

Recruitment was initially launched at the BPS Midlands Conference on the 4th September 2018 via a Social Media Platform Twitter, closing 4 months later on the 4th January 2019. This began on Twitter, posting a Recruitment Poster in JPEG version (Appendix 8.3) with two options to access the online live questionnaire; either via a shortened Bit.ly link to go straight to the Coventry Qualtrics Questionnaire, or a scannable QR Code to scan to take the participant immediately to Coventry Qualtrics Questionnaire on their smart device, tablet or laptop. After launching on Twitter with 34 Retweets and 23 Likes, the questionnaire was then launched via Facebook, firstly on a Personal Status Update and then into relevant groups regarding parents and preschool aged children. A total of 154 groups were requested to be joined or able to post about the study online, and between the 8th November 2018 and the 2nd January 2019, 93 of the groups had accepted the request for the post to be added to their Facebook Group, with successful post activities and numerous successful completions. Whilst online recruitment was going ahead, the study also targeted 'Toddler Sense' groups across Warwickshire and the West Midlands, ending up on the National newsletter of the Toddler Sense across the UK. With

recruitment being most via social media, the responses on Qualtrics cast a wider sample pool than we had first envisaged with the quantitative study, reaching internationally from USA to Australia.

4.2.3. Population / Sample

Participants were required to be a primary caregiver of the child involved in the feeding environment and active within their child's eating behaviours, including both Mothers and Fathers. The primary caregiver was defined as the person most often responsible for what the child consumed outside of any institutional (nursery / preschool) facility (98.7% of mothers and 1.1% of fathers). Medically, the inclusion criteria also stated that the parent or child were only included if they did not have a medical condition that may affect their weight. Due to this, a question was added at the very beginning, and if they stated they or their child had a known medical condition it would take them straight to the end of the questionnaire thanking them for their time. The parents had to have a child aged between 3 and 5 years old. This age range was selected due to previous research suggesting that EE behaviours may develop around the age of 3 to 5 years old (Farrow et al., 2015). In addition, one of the questionnaires used in for data collection (CBQ; Rothbart et al., 2001) measured children from ages 3 and above, thus reducing the original age category of 2-5 years from the systematic literature review (chapter 3), to 3-5 years in the current study.

The parent filled in the questionnaire regarding their youngest preschool aged child, and in instances where more than one preschool aged child was within this age category, the questionnaire was completed with reference to the youngest. The inclusion criteria of the participants were that they had to be able to read, speak, and write English, in order to

understand the questionnaire, and not have any medical condition that may affect their or their child's weight.

The final sample of participants within the study included 1,712 parents, discussing the behavioural traits of themselves and an equivalent number of preschool aged children. A total of 4,553 questionnaires were collected by Qualtrics and sent to the researchers for analysis. Incomplete responses and duplicates were then removed (figure X), for example if parents had started on one device and moved to another they would have had to start from the beginning, or if parents had started and not finished, the incomplete questionnaire would be saved by Qualtrics for analysis.

After duplicates were removed (n = 37), this left a total of 4,516 questionnaires. Once the researcher delved further into the results that were captured by Qualtrics, the decision was made to remove any questionnaires that had not been fully completed up to 90% or over (see figure 8). This totalled a removal of 2,841 entries, including 185 that completed between 75-90%; 67 that completed between 50-75%; 80 that completed between 25-50%; 34 that completed between 10-25%; 1025 that completed <10% to consent only, 865 that completed consent form only, and 865 that did not complete or said no to an item on the consent form. A total 1,712 of participants completed over 90% of the questionnaire over all of the scales, and thus were taken through to further analysis.

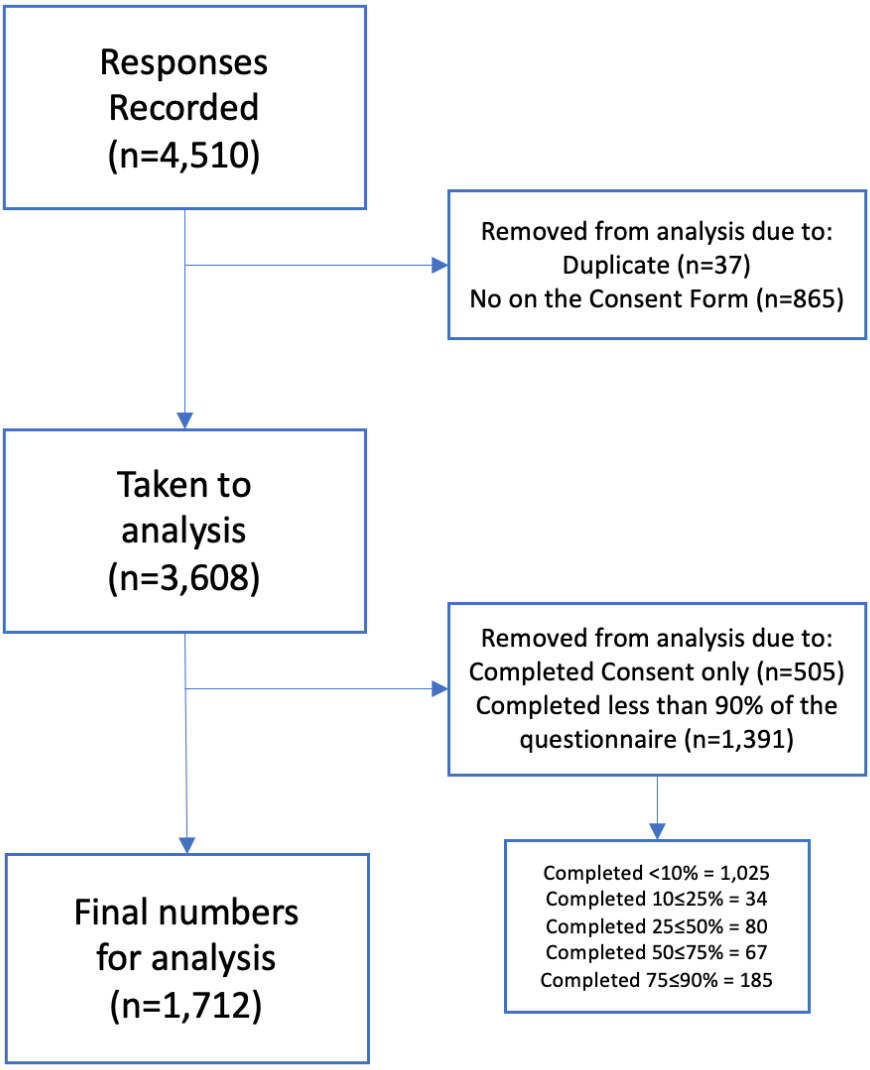

Figure 8: Questionnaire Responses and Final Participant Numbers

4.2.4.Procedure

The online questionnaire was launched on the 4th of September 2018 for a total of 4 months to facilitate a substantial level of data collection. Data for the quantitative cross-sectional study was collected using Qualtrics (www.qualtrics.com), a powerful online survey tool that allows one to build survey, distribute questionnaires, analyse responses and export data to other statistics software. The quantitative cross-sectional study

comprised of a demographic questionnaire split across 3 pages, which included information about themselves (parents), their household, and their preschool aged child. If there were two or more children within the house at preschool age, between the age of 3 and 5 years old, the parents were asked to complete the questionnaire regarding their youngest. In addition to the demographic information sheet, the parents were then asked to fill in a 127-item questionnaire regarding their feeding practices, ER, eating behaviours, their affect in feeding and their child's temperament, split across 6 separate pages. Each page ranged from 13 to 36 questions, with a mean of 21.17 questions per page. The data was then exported from Qualtrics to SPSS 25 Statistics Software Package (www.ibm.com) and complete the first part of the analysis, including the tests of normality, descriptive analysis and population characteristics. The data was then exported to R Project (www.r-project.org), a software environment for statistical computing and analysis, to compute the path analysis on the data.

Using the Qualtrics Online software allowed parents to go back and complete the questionnaire at a time convenient to themselves. Due to the anonymous completion of the questionnaire, it was based on the premise that the parents went back to complete the questionnaire within one week of beginning the questionnaire, and on the same electronic device – thus keeping their place in the questionnaire by the capture of their IP address, and after a week's duration, all data was saved and sent to the researchers for analysis.

4.2.5. Measures

The online questionnaire totalled 127 items, across 18 subscales of 6 validated questionnaires. The scales and subscales used had already been validated in previous

studies, with high Cronbach's alpha for each subscale. The subscales of each questionnaire used to make up the 127 items ranged from Cronbach's alpha of .69 to .94, with each scale discussed in depth in Section 2.4.1. The 127 items did not include the consent form or demographics information sheet that was an additional 19 questions to answer. It took participants on average (SD) 22.09 (17.46) minutes to complete the questionnaire. The participants completed a series of questions about their background, including heir age, gender and ethnicity (Table 8). Participants also completed a series of questionnaire measures, as detailed below:

4.2.5.1. Parental Measures

This study used four measures to investigate parental practices. The Comprehensive Feeding Practices Questionnaire (CFPQ; Musher-Eizenmann, 2007) is a 49 item scale that comprises 12 subscales, with Cronbach's alpha ranging from .58 to .81, used to better understand the feeding practices used by parents when feeding their children. The Difficulty in Emotions Scale (DERS; Gratz & Roemer 2004) is a 41 item scale that comprises of six subscales, with Cronbach's alpha ranging from .80 to .89, used to assess difficulties in emotional regulation among adults. The Dutch Eating Behaviour Questionnaire (DEBQ; Van Strein et al., 1986) is a 33 item scale that comprises or 3 subscales, with Cronbach's alpha ranging from .80 to .95, used to measure adult eating behaviours. Finally, the Feeding Emotion Scale (FES; Frankel et al., 2015) is a 20 item scale across two subscales, with Cronbach's alpha ranging from .84 to .85, examining the parent affect in the context within the feeding environment. These measures have previously been discussed in more detail in Section 2.4.1.

4.2.5.2. Children's Measures

This study used two measures to investigate children's behaviours. The Child Eating Behaviour Questionnaire (CEBQ; Wardle et al., 2001) is a 35 item scale that comprises of eight subscales, with Cronbach's alpha ranging from .75 to .91, used to better understand children's eating behaviours. The Children's Behaviour Questionnaire (CBQ; Rothbart et al., 2001) standard version is a 195 item scale that comprises of 15 primary temperament characteristics that fall into three broad dimensions of Temperament. This study uses the very short version of the CBQ that uses the same three broad subscales, with Cronbach's alpha ranging from .72 to .75, with 12 items mapped in each dimension, equating to a total of 36 items. These measures were discussed in more detail previously in Section 2.4.1.

4.2.5.3. Weight Status

Height and weight measurements alongside demographics were obtained via a self-reported questionnaire about the parent and their youngest child between the ages of three and five years old. Height and weight scores for parents were taken and BMI calculated. Child's height and weight measures were calculated by converting and age and gender specific BMI z scores (Child Growth Foundation, 2012)

4.2.5.4. Additional measures

Within the participant information sheet, additional questions to height and weight were asked regarding the parent's own personal information, including their age, gender, ethnicity, location, education level, current employment, and marital status. Additional

questions were also asked about the number of children were currently in the household, and how many of these were of preschool age. Questions were also asked in addition to the child's height and weight, including; age, gender, and current clothing size. The full participant information sheet and questionnaire can be seen in Appendix 9.3.

4.2.6. Analysis

Due to the number of factors measured within this large cross-sectional study, the most feasible analysis as described in detail in Section 2.6.1 is the use of a path analysis. A theoretical path analysis was first sketched (figure 9; section 2.6.1) via the known and potential theoretical pathways discussed within previous literature. Descriptive statistics were generated using a statistical software package SPSS (SPSS 25 Statistics Software Package; www.ibm.com) for demographic and key study variables. Histograms, skew and kurtosis data for each subscale were conducted, and indicated that the large sample did not deviate substantially from normality. For the use of a path analysis, the large sample size was checked and found to fulfill the requirements of power (at 0.80) necessary to detect a small Pearson's R at $p<0.05$ using a path analysis, as suggested by Cohen (1992). Due to the exploratory nature of the study, we did not arbitrarily reduce the alpha level, rather, we retained the alpha level at $p<0.05$ and utilised the effect sizes within the findings to discuss findings in the context of the potential practical significance of the data. For both the Pearson R Correlations (table 9) and Path Analysis (Figure 13), the alpha level of $P <0.05$ was retained due to the exploratory nature of the study, thus not arbitrarily including or removing a potential relationship. Instead, the study significance was reported and discussed in the context of practical significance, which incorporated effect size as a measure of magnitude. The practical significance of the findings in the path analysis is explained further in section 4.3.2.

Pearson product-moment correlation coefficient analyses were conducted to examine whether PFP, parent ER, parent affect in feeding, parents own EE and child temperament were associated with preschool children's EE behaviour at a bivariate level. With the findings being discussed alongside the significance of the Pearson Correlations are the effect size (Cohen, 1992), with a small effect size if the value of r varies around 0.1, a medium effect size around 0.3, and a large effect size if more than 0.5.

4.2.6.1. The Development of the Path Analytic Model

Determining the existence of variables such as PFP, parental ER and their links to EE behaviours is widely seen via correlations of pairs of variables, repeated measures ANOVAs (Stok, 2008; Micante, 2017), or mediation models (Powell et al., 2017; Tan & Holub, 2015; Vandewalle, Moens & Braet 2014), to focus on a small number of variables and their given relationship. Determining the entwining relationship between not only PFP, but parents' emotionality in and away from the feeding environment, as well as the temperament of the child and the relationship of all these variables on children's EE behaviour is yet to be fully understood. Within this in mind a theoretical model was drawn using previous published research and findings regarding the directionality of the relationships drawn to create the model (Figure 9).

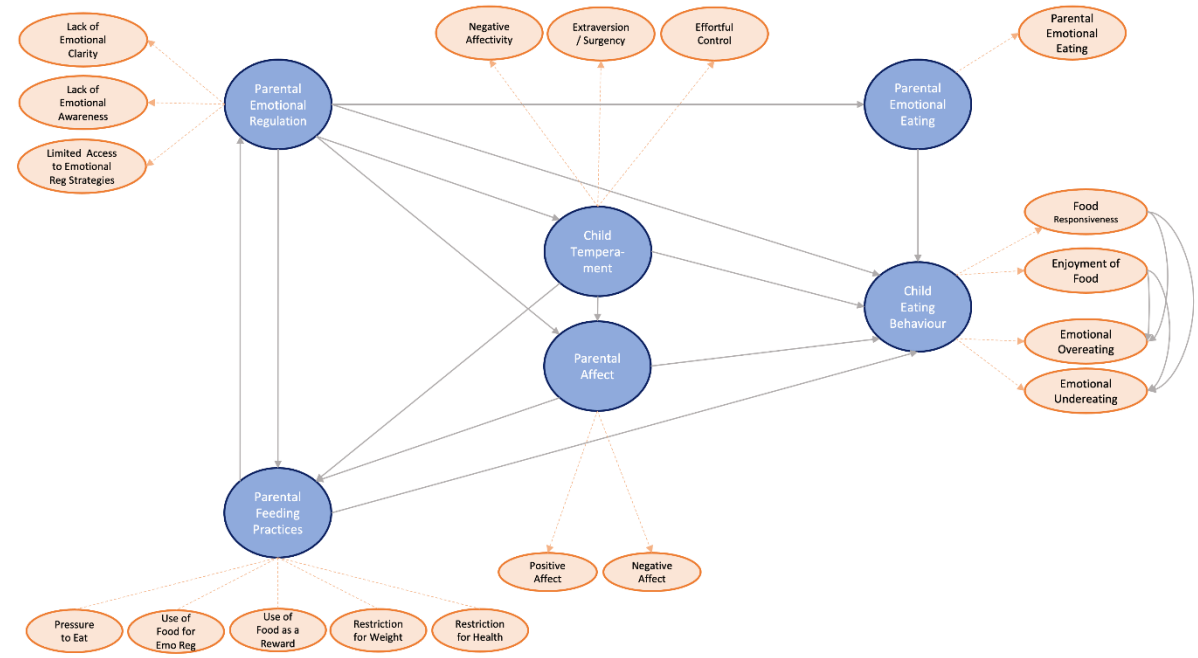

Figure 9: Theoretical Path Analysis Model

Figure 9 shows the theoretical model drawn to explore the relationships between parental ER, PFP, parent affect in feeding, parental EE, child temperament and children's eating behaviours. From these overarching variables, individual subscales of interest were plotted using the validated subscales from questionnaires as discussed in section 2.4.1, with the CBQ, CEBQ, CFPQ, DEBQ, DERS and FES being used to specify the particular subscales and individual variables.

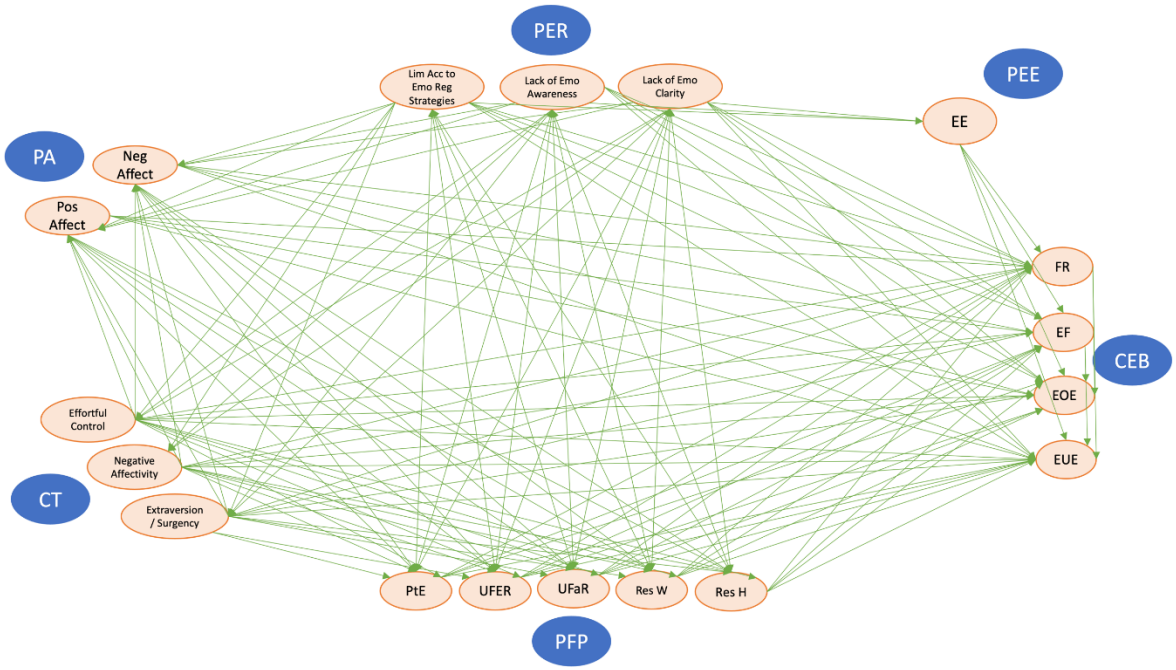

Figure 10: Individual Theoretical Relationship within the Path Analysis

Figure 10 highlights the individual relationships between variables, with each subscale following the relationship drawn between the overarching variables. This is due to the overarching variables not creating a composite measure, with each subscale having individual characteristics within the validated scales.

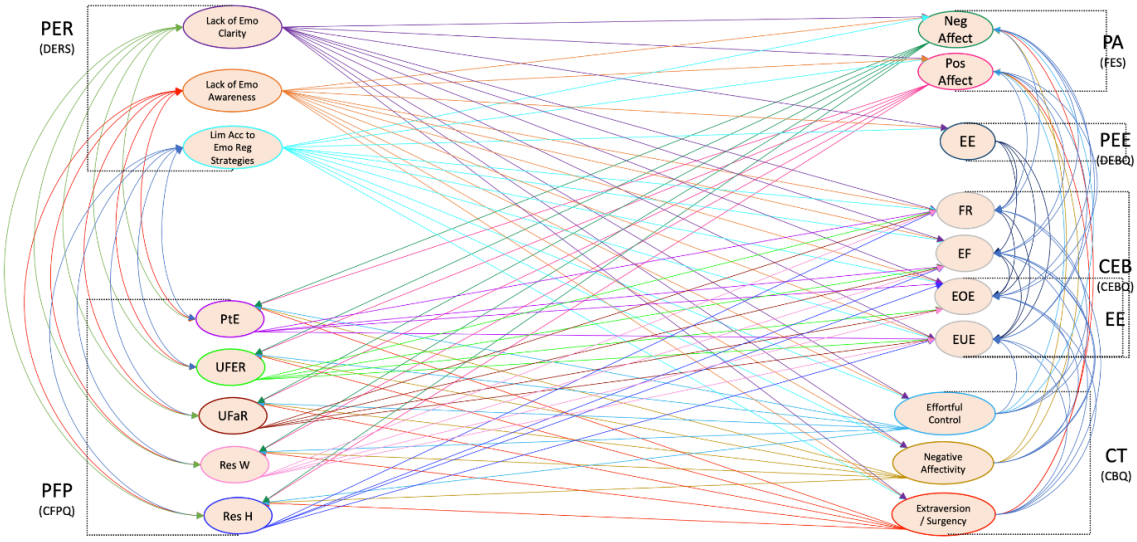

Figure 11: Theoretical Linear Path Analysis Model with Individual Variables

Figure 11 attempts to create a more linear theoretical path, showing the individual subscales, the overarching variables of interest and the validated questionnaires that the individual variables were based on. This was then taken to path analysis with 138 number of lines of relationships being tested. From this the significant data was plotted on to a path analysis diagram shown in Figure 12, showing all the lines of significant data including the directionality of the relationship.

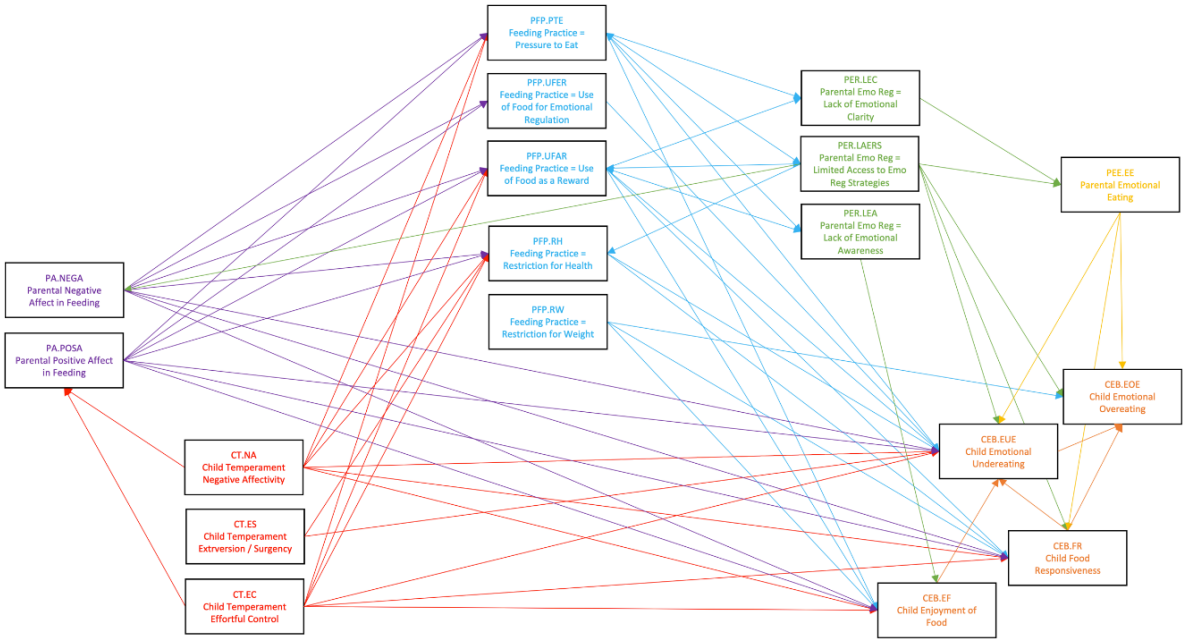

Figure 12: Path Analysis Model with Significant Relationship Lines and Directionality

Using this path analysis diagram and the unstandardised estimate values, the relationships of the finding of the path analysis are discussed.

4.2.6.2. Statistical Analysis

A path analysis was conducted to examine whether parent emotionality factors; parent emotion regulation, parent affect in feeding, and parent EE, and child emotionality factor child temperament were associated with PFP (PTE, restriction for health or weight, UFER, UFAR) and EE (EOE and EUE). The path analysis was conducted using the software package R (Version 4.0.3; r-project.org), which allowed the exploration of the associations in question among the variables of interest while taking into account and controlling for other associations within the model. The path analysis model was controlled and adjusted for; parent BMI, child BMI z score, parent education level, employment status and country of residence.

The X^2 test, Comparative Fit Index (CFI), the Standardised Root Mean Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA) were used to assess how well the model described the data. The X^2 test indicates how well the model fits the data, with nonsignificant X^2values indicating a small discrepancy between the structure of the observed data and the hypothesized path analysis model. The CFI produces values between 0 and 1, with high values of over 0.90 indicating a good fit of the data to the hypothesised model. When CFI values are >0.97, this represents a better fit compared to independence models, and it is considered an acceptable fit if the value is larger than 0.95 (Schermelleh-Engel & Moosbrugger, 2003). RMSEA is an index of the difference between the observed covariance matrix per degree of freedom, and the hypothesized covariance matrix which denotes the model. According to Chen (2007), a value of <0.05 for the RMSEA represents a 'good' fit to the data. SRMR indicates an acceptable fit with a corresponding value smaller than 0.10, whilst an indicator of 'good' fit is considered when it produces a value lower than 0.05 (Kline, 2011; Hu and Bentler, 1999; Schermelleh-Engel and Moosbrugger, 2003; Lacobucci, 2010). Furthermore, SRMR index is often considered preferential to RMSEA in interpreting goodness of fit, due its relative independence from sample size (Chen, 2007).

Power calculations were conducted to provide guidance on the number of participants required for the study. Using analysis as a path analysis or Structural Equation Model requires a large sample size due to the complexity of the model (Kline 1998). It is recommended that an adequate sample ratio of the number of participants or sample size to free parameters within the path analysis should be 10:1 ratio. The final total sample size used equals 1,700 participants, and with free parameters in the path analysis at 135, it makes the ratio 12.5:1 which is above the 10:1 adequate ratio.

4.3. Results

4.3.1. Demographic Characteristics

From the initial recorded responses, a total of 1,712 responses that were over 90% completed were taken to further analysis (Figure 8). Responses were removed if they were; duplicates (n = 37), had not filled in the consent form with yes on each agreement (n = 865), had completed the consent form but no additional data (n = 505), had completed <10% of the overall questionnaire (n = 1025), completed between 10% and <25% of the overall questionnaire (n = 34), completed between 25% and <50% of the overall questionnaire (n = 80), completed between 50% and <75% of the overall questionnaire (n = 67), completed between 75% and 90% of the overall questionnaire (n = 185).

The demographic characteristics of the final sample of 1,712 parents are presented in Table 8. 98.7% of parents who participated in the study were female, with a mean (SD) age of 33.23 (5.35) years and a range between 18 and 49 years old. 73.4% of parents stated themselves and their child as white British. Over half of the parents were classified as having overweight or obesity (55.9%), with a mean BMI of 26.89 kg/m2 (SD 5.6). With respect to employment, two thirds were in full or part time employment (66.1%) with 85.3% either married or living together, and 85.4% of parents classing themselves as college educated or above.

The mean age of children was 3.66 years of age (SD 0.74), with an even distribution between male and female. Based on the CDC age and sex-specific categories of weight references, over half (58.4%) are of a normal weight ($5^{th} \leq 85^{th}$ percentile), with 28.9%

classified as either having overweight or obesity (≥85th percentile) and 12.7% classified as underweight <5th percentile). The remaining sample characteristics are detailed in table 8. Almost three quarters of families had two or more children within the household (73.7%), of which 27.1% of these had two or more of preschool age. Intercorrelations between family variables were explored, with parent BMI and child BMI-to-age percentile classifications being positively correlated, thus suggesting parents with higher BMI had preschool children with a higher percentile classification, X^2 (12, N = 893) = 22.47, p>0.05.

Table 8: Participant Demographics

		Parents (N = 1712)
Age (years)	Mean (SD)	33.23 (5.35)
	Range	18 - 49
Gender	Male	1.1%
	Female	98.7%
Ethnicity	White British	73.4%
	White Other	21.2%
	Asian	2.40%
	Afro-Caribbean	1.00%
	Mixed Heritage	1.20%
	Other	0.80%x
Height (m)	Mean (SD)	1.65 (0.07)
	Range	1.35 – 1.96
Weight (kg)	Mean (SD)	73.51 (15.75)
	Range	42 – 115.7
BMI	Mean (SD)	26.89 (5.60)
	Range	15.33 – 44.34
BMI Categories	Underweight (<18.5)	2.5%
	Normal Weight (18.5-24.9)	41.6%
	Overweight (25-29.9)	29.9%

	Obese (30-39.9)	23.4%
	Morbidly Obese (>40)	2.5%
Education Level	High School	11.8%
	College	31.7%
	University	31.3%
	Post-graduate	22.4%
Employment	Unemployed	19.4%
	Part-time	39.5%
	Full-time	26.6%
	Self-Employed	3.3%
	Unable to Work	4.4%
	Student	1.2%
	Other	5.6%
Marital Status	Single	11.4%
	Married	64.0%
	Living Together	21.3%
	Others	3.3%
Children in the Household	1 Child	26.3%
	2 Children	50.9%
	3 Children	15.6%
	4 Children	5.5%
	More than 4 Children	1.7%
Children in the Household of Preschool age.	1 Child	76.4%
	2 Children	18.9%
	3 Children	3.5%
	4 Children	0.7%
	More than 4 Children	0.5%
	Preschool aged Child	
Age (Years)	Mean (SD)	3.66 (0.74)
	Range	3 - 5
Gender	Male	53.5%
	Female	46.5%
Height (cm)	Mean (SD)	102.04 (9.53)

	Range	70 – 130
Weight (kg)	Mean (SD)	16.51 (2.71)
	Range	9.00 - 24.04
BMI Z-Score	Mean (SD)	-0.09 (0.83)
	Range	-2.76 – 2.99
BMI Weight Categories	Underweight (<5%)	12.7%
	Normal Weight (5-85%)	58.4%
	Overweight (85-95%)	10.1%
	Obese (>95%)	18.8%

4.3.2. Preliminary analyses

Table 9 displays the means, standard deviations and correlation coefficients among demographic and key study variables. With regard to demographic variables, due to the sample size, many of the bivariate correlational results (table 9) were deemed significant to a $p<0.001$ level. This may be due to the fact that studies with large sample sizes may reach and establish $p<0.05$ significance level with smaller changes in effect size. At a constant p level, effect size declines as a function of sample size, thus meaning the findings would need to be considerably larger for the same effect size in a large sample group in comparison to a small sample group (Kaplan, Chambers & Glasgow, 2014; Greenwald et al., 1996). With the path analysis being a primary analysis for the multiple relationships between these variables, the p value was kept at a 95% confidence interval with an alpha of $p<0.05$ (Thiese, Ronna & Ott, 2016). Of the 276 results in the Pearson r Correlation table, 56% were significant to $p<0.05$, with 42.4% significant to $p<0.001$. Due to the large sample size of the study, challenges are found when discussing and interpreting the results using statistical significance alone. Therefore the findings are discussed regarding practical significance – what the findings mean – in addition to their statistical significance (Lin, Lucas & Shmueli, 2013). The practical significance of the

Cohen's D effect sizes; focusing on a small (0.1), medium (0.3), and a large effect sizes (0.5); in addition to the 95% confidence interval helps to explore the findings. The preliminary correlational findings revealed that parental age was significantly negatively associated with the PFP UFAR ($r=-0.257$, $p<.001$) and 'PTE' ($r=-0.202$, $p<0.001$). Parental age was also significantly negatively associated with parents own ER, especially LAERS ($r=-0.253$, $p<0.001$), meaning that an increase in parental age was associated with a decrease in the lack of strategies parents use to regulate their emotion. It was also noted that parental BMI was significantly positively associated with parents own EE ($r=0.308$, $p<0.001$), as well as a significant positive association with parents LAERS ($r=0.206$, $p<0.001$).

Table 9: Bivariate Pearson's r Correlation of Demographics and Key Variables.

Correlations of Mean Scores	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Parent Demographic Variables																								
1 Parent Age (years)	1.000																							
2 Gender	-.053*	1.000																						
3 Parent BMI (kg/m2)	-.051*	-0.006	1.000																					
Child Demographic Variables																								
4 Child Age (years)	.051*	0.001	-0.012	1.000																				
5 Child Gender	-0.035	0.001	-0.021	0.001	1.000																			
6 Child BMI Z-Score	-.062*	0.006	.078**	-.123***	-0.058	1.000																		
Children's Eating Behaviours																								
7 Enjoyment of Food	-0.034	-0.013	-0.021	0.005	-0.003	0.05	1																	
8 Emotional Overeating	-.059*	0.006	0.044	.051*	-0.01	0.027	.137***	1.000																
9 Emotional Undereating	-.105***	-0.042	0.003	-.066**	0.003	0.004	-.151***	.318***	1.000															
10 Food Responsiveness	-.151***	0.013	.049*	0.031	-0.013	.070*	.414***	.538***	.087***	1.000														
Child Behaviour																								
11 Extraversion / Surgency	-.066**	-0.005	0.034	-0.041	-0.05	-0.012	.066**	-0.004	-0.008	.061*	1.000													
12 Effortful Control	-0.005	0.036	-0.026	-0.002	.126***	-.078**	.113***	-0.025	-0.001	-0.045	-.082**	1.000												
13 Negative Affectivity	-.076**	0.003	0.041	.065**	0.006	0.007	-.093***	.123***	.151***	.102***	-.151***	-0.009	1.000											
Parental Feeding Practices																								
14 Use of Food for Emotional Regulation	-0.028	0.015	0.024	-.092**	-0.012	0.034	-0.041	.349***	.215***	.230***	-0.011	-0.040	.109***	1.000										
15 Use of Food as a Reward	-.257***	-0.027	.077***	-0.041	-0.019	0.033	-.070**	.264***	.247***	.293***	0.037	-.086**	.159***	.329***	1.000									
16 Restriction for Weight	-0.012	-0.03	.069**	-0.006	-0.002	0.042	.146***	.204***	.051*	.231***	0.042	-0.008	-0.042	.076**	.180***	1.000								
17 Restriction for Health	-.071**	-0.018	0.027	0.029	0.009	0.034	0.013	.279***	.159***	.409***	0.047	-.087***	.083**	.169***	.359***	.383***	1.000							
18 Pressure to Eat	-.202***	-0.034	-0.01	0.046	-0.015	-0.016	-.102***	.128***	.201***	.167***	.050*	-0.038	.085**	.175***	.450***	.093***	.223***	1.000						
Parental Emotional Eating																								
19 Emotional Eating	-0.011	0.003	.308***	0.009	-0.017	-0.01	-0.026	.270***	.141***	.194***	0.020	0.009	.071**	.248***	.162***	.086***	.168***	0.039	1.000					
Parental Affect in Feeding																								
20 Positive Affect in Feeding	-.073**	-.048*	-0.044	-0.02	0.007	0.002	.352***	-.081**	-.126***	-0.022	0.027	.192***	-.128***	-.098***	-.143***	0.005	-.155***	-.090***	-.196***	1.000				
21 Negative Affect in Feeding	0.025	0.021	.088**	0.003	-0.015	-0.001	-.251***	.247***	.265***	.135***	0.038	-.153***	.170***	.228***	.235***	.050*	.209***	.162***	.308***	-.547***	1.000			
Parental Emotion Regulation																								
22 Lack of Emotional Awareness	-.141***	-0.01	.129***	0.007	-0.023	0.032	-.139***	.079**	.092***	.076**	-0.032	-.085**	.115***	.063**	.149***	0.034	0.024	.145***	.144***	-.253***	.258***	1.000		
23 Limited Access to Emotional Regulation Strategies	-.253***	0.027	.206***	0.018	0.043	0.051	-.086***	.164***	.178***	.120***	0.009	-.067**	.172***	.104***	.168***	.054*	.104***	.128***	.310***	-.250***	.410***	.402***	1.000	
24 Lack of Emotional Clarity	-.195***	-0.044	.129***	0.007	-0.012	0.01	-.117***	.161***	.128***	.109***	-0.029	-.118***	.142***	.130***	.169***	0.034	.061*	.136***	.229***	-.268***	.347***	.663***	.587***	1.000
Mean	33.230	na	26.890	3.660	na	-0.090	3.653	1.623	2.794	2.422	4.590	5.135	3.997	2.004	2.461	1.680	2.869	2.688	2.618	3.321	2.101	2.757	2.118	2.170
Range	18 - 49	na	15.33 - 44.34	3 - 5.	na	-2.76 - 2.99	1 - 5	1 - 4	1 - 5	1 - 5	1.75 - 7	1.67 - 6.92	1.33 - 7	1 - 5	1 - 5	1 - 4.13	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5
Standard Deviation	5.350	na	5.600	0.740	na	0.830	0.831	0.559	0.870	0.865	0.855	0.771	0.916	0.634	0.807	0.509	0.856	0.779	0.944	0.652	0.619	0.945	0.894	0.796

* p < 0.05 level (2-tailed).

** p < 0.01 level (2-tailed).

*** p < 0.001 level (2-tailed).

Focusing on the bivariate correlations with key variables within the data (Table 9), it was noted that parental UFER, as well children's FR and their EUE were all significantly positively associated with preschool children's EOE behaviours. There was a strong significant positive association among PFP, with restriction for health and PTE both being significantly positively associated with UFAR. UFAR was also significantly positively associated with UFER, as was a significant positive association between restriction for health and restriction for weight feeding practices. All feeding practices were positively associated with both EUE and EOE. Use of Food for Emotional Regulation was the strongest association with EOE, with a medium effect size of 0.349, $p<0.001$.

Focusing on parents own emotionality within the bivariate correlations (Table 9), parental negative affect in feeding was strongly significantly positively associated with parents own EE behaviours, as was parents LAERS. All three of the factors of parental ER; LEA, LAERS, and LEC were strongly positively associated with each other with a large Pearson's r correlation effect size. Table 9 shows the remaining bivariate correlations and their significance and effect size across demographics and key variables.

Once the variables are added into the path analysis model however, the number of significant associations are reduced, with fewer relationships when controlling for all variables. The main findings below (section 4.3.3) further discuss the associations found within the path analysis model (Figure 13).

4.3.3. Main Findings

The results of the hypothesized adjusted path analysis model revealed a good fit to the data (33, N = 1712) = 916.02, $p<0.001$, RMSEA = 0.029, 90%m[0.022, 0.036], CFI = 0.975, SRMR = 0.018. The Path Analysis indicated significant positive associations

between parents use of Restriction for weight purposes, Parents LAERS, Parental EE, and Child FR on Childhood EOE behaviours. Significant positive associations were also found between Parent LAERS, parents negative affect in feeding, Child Temperament of negative affectivity, and feeding practices UFAR and PTE on children's EUE behaviours. Conversely, significant negative associations were also found between both Positive Affect in Feeding and Childs EF on EUE, shedding light on a previously relatively unexplored aspect of children's EE.

Figure 13 shows all the significant lines of data on the path analysis, with the unstandardised estimates and significant values. 66 significant associations were found, of which 68.2% were significant at $p<0.001$ and 31.8% were significant at $p<0.05$ or below. The discussion was held regarding adjusting the p value, however due to the exploratory nature of the path analysis model and the relationship between variables, the significance level was kept to $p<0.05$ to be added into the results for the path analysis. It must be noted however that actual p values are stated within the model to support the understanding of the measure of the degree of data compatibility.

Due to the large sample size, relationships in the original path analysis (figure 13) shows numerous significant results even though the effect sizes are small. With this in mind, and focusing on a more practical over statistical significance, figure 14 shows the path analysis with findings above an estimate of 0.1, showing more than a 10% change in behaviour. This equates to 41 significant associations above a 10% change in behaviours, with 85.4% significant to $p<0.001$ and 14.6% significant at $p<0.05$ or below.

Due to the Likert scales within the questionnaire ranging from a 5 point to a 7 point Likert scale, a 14% change or above (on a 7 point Likert scale; e.g. the 'Child temperament' scale) or a 20% change or above (on a 5 point Likert scale; e.g. the Parents ER, Parents

Affect, Parents Feeding Practices, Parental EE, and the Childs eating behaviours scales) in estimates would equate to a whole point change on the Likert scales within the path analysis. Table 10 shows the path analysis results of a change in 1 point equating in a whole change in Likert point on the behaviour.

Table 10: Estimates over a 1 point change in Path Analysis a -> b Behaviour

a	b	Path Regression Estimate	Percentage change	Likert Point Scale	Likert point change
Child Temperament Negative Affectivity	Parental Positive Affect in Feeding	*-0.253***	-25.30%	7	1.7
Child Temperament Effortful Control	Parental Positive Affect in Feeding	0.208***	20.80%	7	1.456
Parental Negative Affect in Feeding	Children's EF	*-0.257***	-25.70%	5	-1.285
Parental Positive Affect in Feeding	Children's EF	0.257***	25.70%	5	1.285
Parent's LAERS	Parental Negative Affect in Feeding	0.261**	26.10%	5	1.305
Parent's LAERS	Parent's EE	0.282***	28.20%	5	1.41
Parent's LAERS	Children's EOE	0.200*	20%	5	1
Parental Feeding Practice Restriction for Health	Children's FR	0.319***	31.90%	5	1.595
Parental Feeding Practice Restriction for Weight	Children's EOE	0.333**	33.30%	5	1.665
Parental Feeding Practice Restriction for Weight	Children's EF	0.279***	27.90%	5	1.395
Children's EF	Children's EUE	*-0.238***	-23.80%	5	-1.19
Children's FR	Children's EOE	0.342***	34.20%	5	1.71

*** p < 0.05 level (2-tailed).**

**** p < 0.01 level (2-tailed).**

***** p < 0.001 level (2-tailed).**

Whilst key associations will be drawn and discussed in detail below focusing on individual research aims, overarching findings from the path analysis focus on the relationship between parent and child emotionality, and the strategies and practices used in the relationship with EE behaviours. The overarching findings (figure 13) suggest that both ER and temperament, from parent and child respectively, plays a fundamental part in the use of PFP and association with EE behaviours.

Child temperament, negative affectivity and effortful control, have a negative ($b = -0.253$, $p<0.001$) and positive ($b = 0.208$, $p<0.001$) association with parental positive affect in feeding respectively, suggesting a child's temperament has a direct association with how the parent feels in the feeding environment. Parental affect in feeding has a similar relationship, with positive and negative affect in feeding associated with decreased or increased use of PFP respectively, associated with children's EOE and EUE behaviours.

Parents own emotion regulation also has a part to play in this relationship, with limited access to emotion regulation positively associated with parental negative affect in feeding ($b = 0.261$, $p=0.002$), parents EE ($b = 0.282$, $p<0.001$), and children's EUE ($b = 0.153$, $p<0.001$) and EOE ($b = 0.200$, $p=0.017$). Altogether these relationships suggest that a difficult temperament (negative affectivity), feeling negative in the feeding environment and an inability to regulate emotions are associated with children's EE behaviours. Conversely, a calming temperament (effortful control), feeling positive in the feeding environment and an ability to regulate emotions may be all associated with lower levels of EE behaviours.

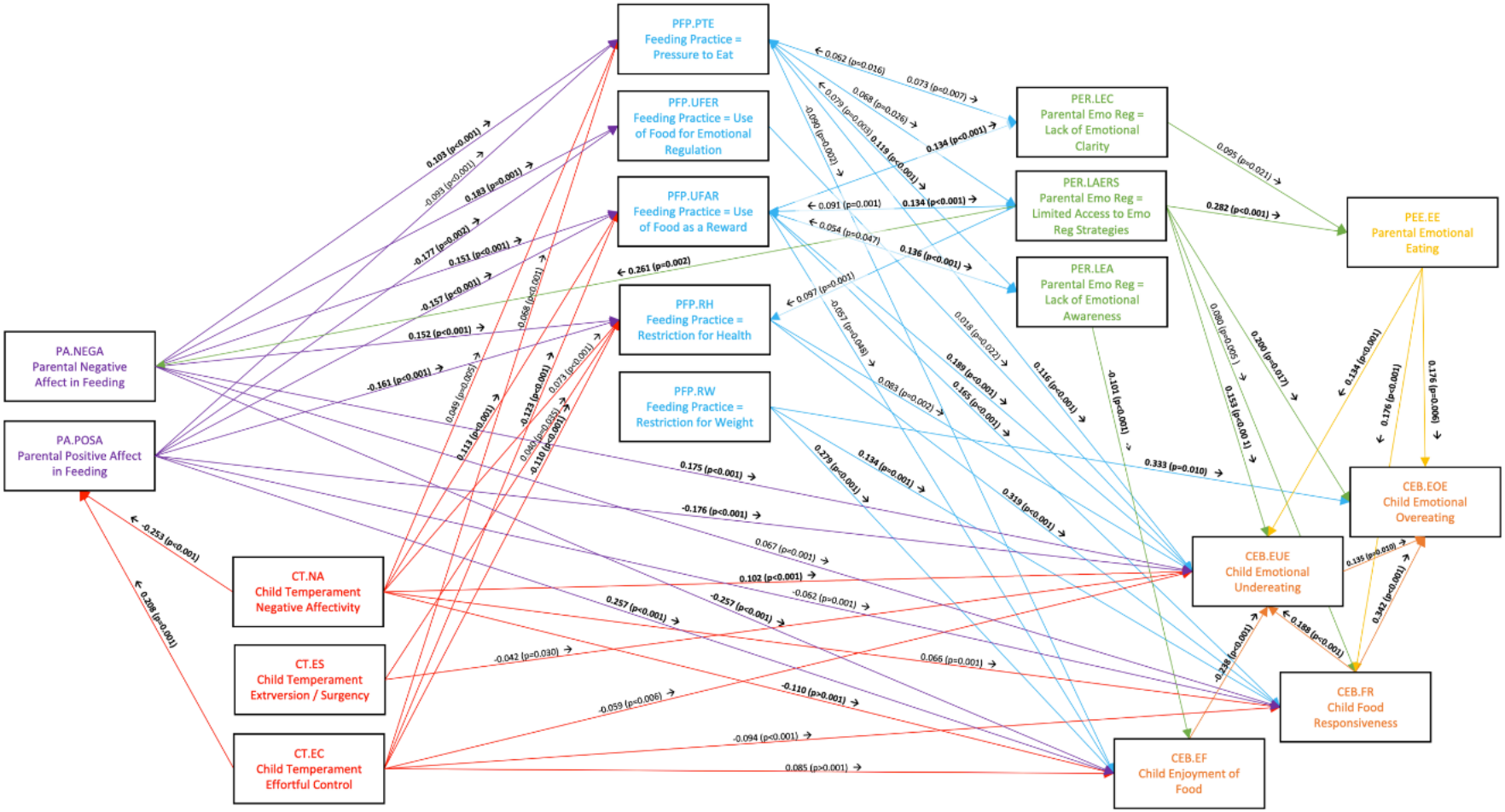

Figure 13: Results of Adjusted Path Analysis with all Unstandardised Estimates

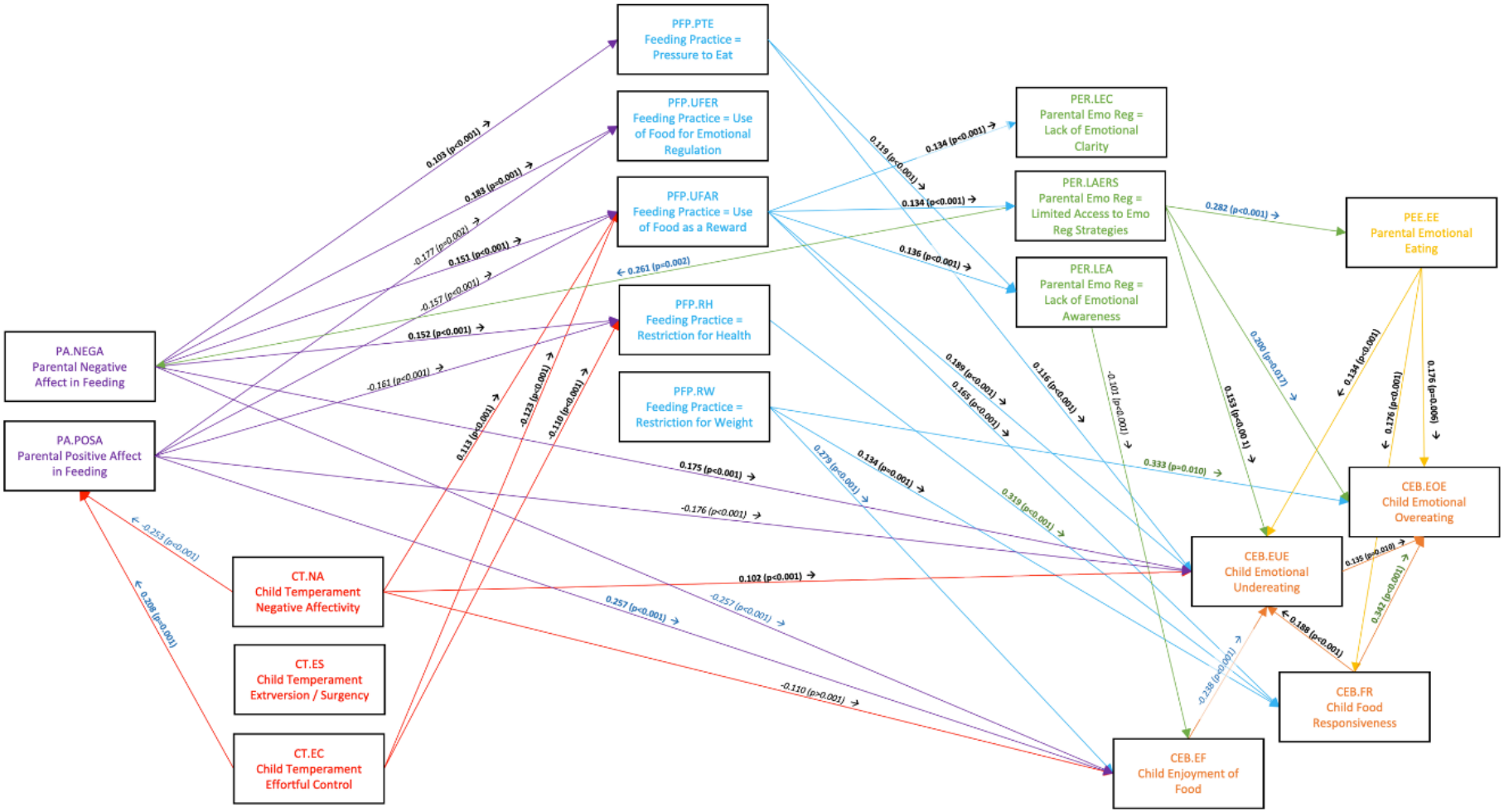

Figure 14: Results of Adjusted Path Analysis with Unstandardised Estimates above 10%

4.3.4. Key Associations in the Path Analysis

The key associations further discussed from the path analysis have been drawn out individually and separated into elements of parental feeding practices, parental emotionality and child temperament, following the five research aims.

Research Aim a: "What are the most salient strategies and behaviours linked to emotional overeating and undereating in preschool aged children?"

Within the path analysis, figure 14 shows a total of 41 associations above 10% change in estimate values. The most salient of these variables are seen in Table 10, highlighting the path analysis results of a change in 1 point equating in a whole change in Likert point on the behaviour.

In accordance with research aim 'a', the most salient variables from the path analysis linked to children's emotional overeating behaviours were; parents limited access to emotional regulation strategies ($b = 0.200$, $p<0.05$), restriction for weight ($b = 0.333$, $p<0.01$), and children's FR ($b = 0.342$, $p<0.001$). These variables showed that 1-unit change was positively associated with children's EOE behaviours (table 10). Figure 15 shows the highlighted direct relationships between the variables and Children's EOE behaviours. In addition to the variables mentioned above, other variables such as parents EE and children's EUE behaviours were significantly associated with children's EOE (figure 15).

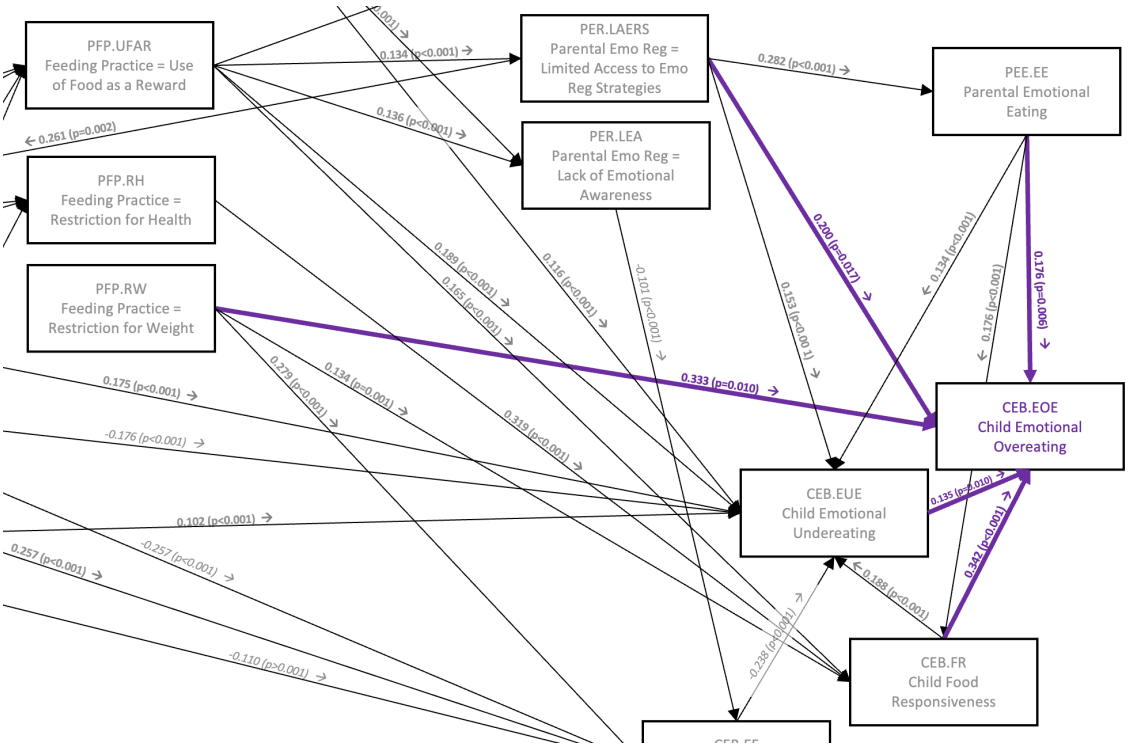

Figure 15: Direct Associations with Children's Emotional Overeating

The most salient variable from the path analysis linked to children's EUE behaviours was children's EF (b = -0.238, p<0.001). This variable in particular showed that 1-unit change was negatively associated with children's EUE behaviours (table 10). Other variables such as LAERS, PTE, UFAR, child negative affectivity, and positive and negative affect in feeding reached significance and showed positive and negative relationships with children's EUE in the path analysis (see figure 16).

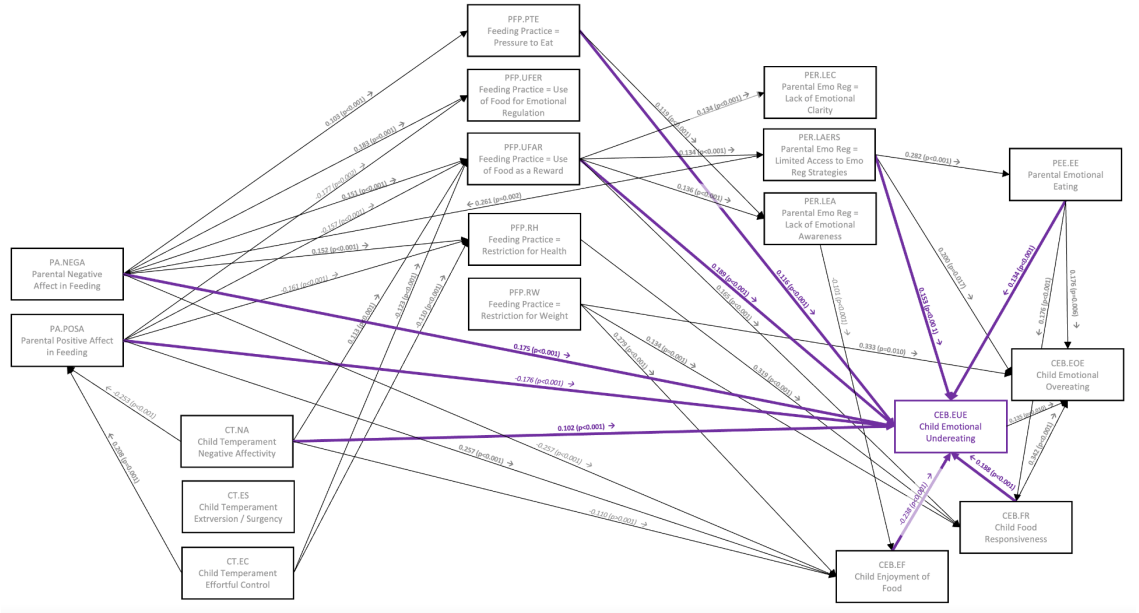

Figure 16: Direct Associations with Children's Emotional Undereating

4.3.4.1. Parental Feeding Practices

Parental feeding practices (figure 14) showed statistically significant associations with parents' ER abilities and children's eating behaviours. In particular, PTE was positively associated with parents LEA b = 0.119, p<0.001. UFAR was positively associated with all three emotional regulation subscales LEC (b = 0.134, p<0.001), LAERS (b = 0.134, p<0.001), and LEA (b = 0.136, p<0.001). This suggests that use of PTE and UFAR is associated with an increased likelihood of parents being unable to either be aware of, or understand and have strategies to regulate their emotions.

Focusing on PFP and children's eating behaviours, particularly EUE behaviours, when controlling for all variables, positive relationships were drawn between the UFAR and PTE and children's EUE behaviours with b = 0.189 p<0.001 and b = 0.116 p<0.001 respectively. This suggests that an increase in both of these PFP by parents is positively associated with children's EUE behaviours, with a 1-unit change in UFAR associated

with a 18.9% increase in children's EUE behaviours, or an increase of 0.95 points on the EUE Likert scale. Similarly, a 1-unit change in the Likert scale of PTE is associated with an 11.5% increase in children's EUE behaviours, or an increase of 0.58 points on the EUE Likert scale.

Focusing on parents use of PFP and children's EOE behaviours, 'restriction for weight' had a positive association with children's EOE $b = 0.333$, $p<0.05$, suggesting a 1-unit increase in the Likert scale of 'restriction for weight' is associated with a 33.3% increase in children's EOE behaviours, or an increase of 1.6 points on the Likert scale. As discussed in section 1.2.1, EOE is a 'food approach' behaviour, with children showing higher EOE behaviours also showing higher levels of other food approach behaviours such as EF and FR. It must therefore be noted that although 'restriction for health' and UFAR are not directly associated to 'EOE' on the path analysis (figure 14), they are positively associated to both EF and FR with $b = 0.319$, $p<0.001$ and $b = 0.169$, $p<0.001$ respectively. As discussed in section 1.2, food approach behaviours such as these are shown to link within the literature with EOE, another food approach behaviour. This idea is supported as the path analysis (figure 14) showing FR associated with EOE $b = 0.342$, $p<0.001$. With this in mind, although these PFP are not directly associated with EOE themselves, an association can be noted with other food approach behaviours, due the strong association between food approach behaviours in the literature.

Research Aim b: "Are parental emotionality and parent feeding practices associated with children's eating behaviours?"

In accordance with research aim 'b' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between UFAR, LAERS and children's EUE.

Focusing on these additional relationships with EUE, there was a positive association between UFAR and children's EUE (b = 0.189, p<0.001), UFAR was also positively associated with parental LAERS (b = 0.134, p<0.001), and LAERS was in turn associated with children's EUE (b = 0.153, p<0.001), which suggests some interplay between them (figure 17). Prior to the path analysis, the bivariate correlation between UFAR and EUE was r = 0.247, p<0.001, suggesting that parents use of food as a reward is positively associated with children's EUE behaviours. Within the fully adjusted model the associations between all of these variables were significant (figure 17) suggesting the limited access to emotion regulation strategies plays a role in this association and may act as a partial mediator.

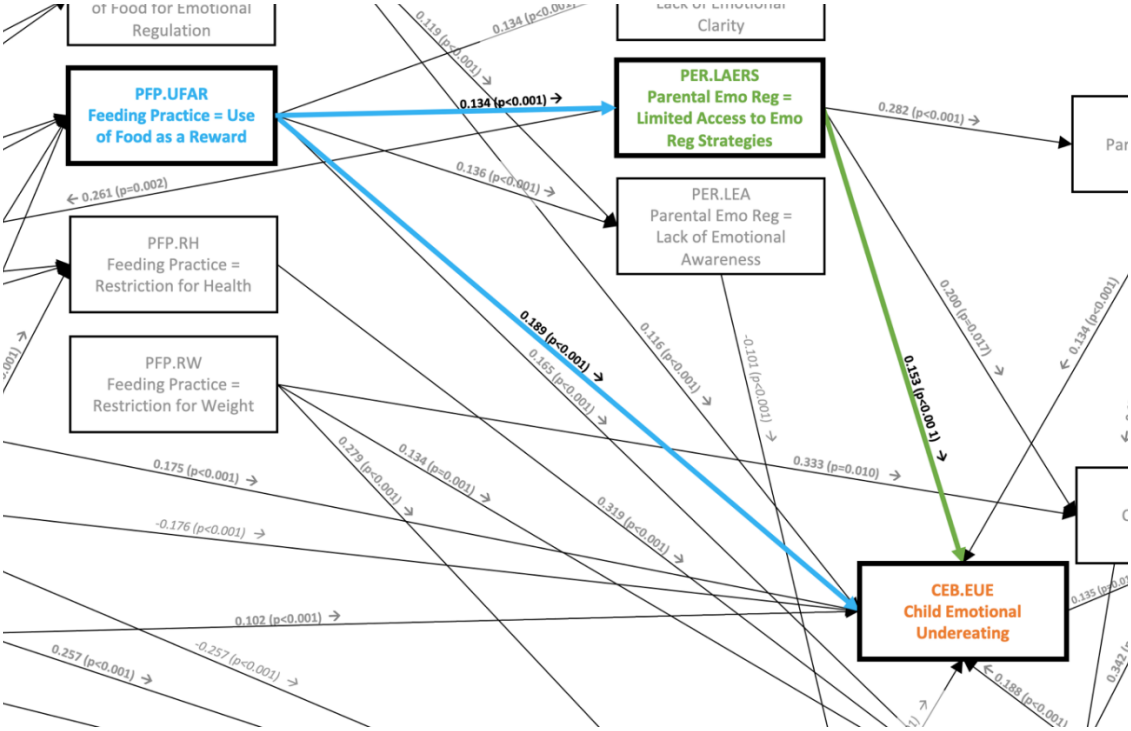

Figure 17: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between Parental use of food as a reward, Parents limited access to emotional regulation strategies and child EUE (N=1712).

In addition to the direct effect of the above PFP, other feeding practices are seen to have a relationship with EUE via a secondary child's eating behaviour. An example from within

the path analysis (figure 14), restriction for weight is positively associated with children's EF b = 0.279 p<0.001, which is in turn negatively associated with children's EUE behaviours b = -0.238 p<0.001. In consideration of the theoretical assumptions underpinning the path analysis, this relationship may suggest that parents using restriction of food for weight purposes is linked to children enjoying food more when it becomes available to them, which in turn would suggest a reduction in undereating behaviours when faced with an emotional situation. Alternatively, due to the cross-sectional nature of the path analysis, it may also suggest that children who enjoy food more experience more restriction from their parents. With this in mind they could also be then less likely to emotionally undereat given that they show more food approach than food avoidance behaviours.

In accordance with research aim 'b' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between restriction for weight', child's FR and child's EOE. Focusing on the additional relationships with EOE, there was a positive association between 'restriction for weight' and child's EOE (b =0.333, p<0.05), 'restriction for weight' was also positively associated with child's FR (b = 0.134, p<0.001), and child's FR was in turn associated EOE (b = 0.342, p<0.001), which suggests some interplay between them (figure 18).

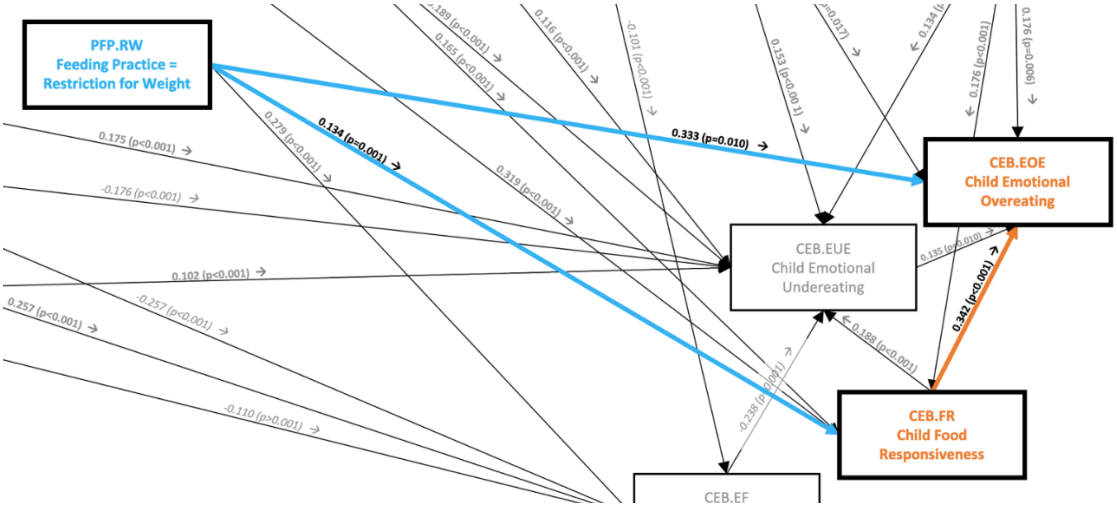

Figure 18: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between Parental use of restriction for weight, child's food responsiveness and child EOE (N=1712)

In addition to the direct effect of the parental feeding practice 'restriction for weight', other feeding practices are seen to have a relationship with EOE via a secondary child's eating behaviour. An example from within the path analysis (figure 14), the feeding practice UFAR is associated with child's FR (b = 0.165, p<0.001), which in turn is associated with EOE behaviour (b = 0.342, p<0.001). This relationship may suggest that parents using food as a reward to a child who has high responsiveness to food are also more likely to have children who show overeating behaviours when faced with an emotional situation.

4.3.4.2. Parental Emotionality

Parents emotionality, particularly parents own ER, on the path analysis model shows statistically significant associations with their affect in feeding, their own EE behaviours, and children's eating behaviours (figure 14). Parents own emotionality in eating, namely 'EE' is associated with both EOE and EUE in their preschool aged child with b = 0.176, p<0.01 and b = 0.134, p<0.001 respectively. This has been widely discussed within the literature but interesting to see that there is a strong positive relationship between parent

and child EE behaviours. The path analysis (figure 14) shows that, for example, an increase of 1 Likert point on the parents own EE, increases the child's EOE by 17.6% or a .88 of a Likert point, and the child's EUE by 13.4% or a .67 of a Likert point.

Focusing more on parents ER in particular, parents LAERS is positively associated with parents negative affect in feeding ($b = 0.261$, $p<0.01$), parental EE ($b = 0.282$, $p<0.001$), and Children's EUE ($b = 0.153$, $p<0.001$) and overeating ($b = 0.200$, $p<0.05$) behaviours. This suggests that when there is a 1 point increase in the Likert sub scale of parents inability to access emotion regulation strategies, this is associated with a 15.3% increase in children's EUE behaviours, or an increase of 0.77 points on the EUE Likert scale. Similarly, a 1 point increase in the Likert scale of LAERS is associated with a 20% increase in children's EOE behaviours, or an increase of 1 point on the EOE Likert scale.

These results suggest that an increase in a parent's inability to access their emotion regulation strategies, is associated with increases in the likelihood that the parent would feel negative emotions while feeding their preschool child, have their own EE behaviours, and have a child who emotionally eats - whether in over or undereating. Parents' emotion regulation LEA on the other hand is negatively associated with children's 'EF' ($b = -0.101$, $p<0.001$) suggesting that a parental increase in lack of awareness of their own emotions would reduce the likelihood to have a child who enjoys food.

Focusing in particular on parents' emotionality during feeding, parents' negative affect in feeding is statistically positively associated with use of feeding practices 'PTE' ($b = 0.103$, $p<0.001$), UFER ($b = 0.183$, $p<0.001$), UFAR ($b = 0.151$, $p<0.001$), and 'RFH' ($b = 0.152$, $p<0.001$). This suggests that an increase in feelings of negativity whilst feeding increases the likelihood of use feeding practices with their preschool aged child. In addition to the relationship with feeding practices, 'NEGA' has a direct statistically positive association

with EUE (b = 0.175, p<0.001), suggesting that a parent feeling negative during a feeding experience is more likely to have a child who emotionally undereats. This is further supported by the relationship between negative affect in feeding and children's EF behaviours with a strong significant negative association (b = -0.257, p<0.001), suggesting that the same feelings of negativity during a the feeding time is linked to a reduction in EF from their preschool aged child.

On the other hand, focusing parents positive affect in feeding, happy and content emotions while feeding their preschool aged children, is negatively associated with the use of feeding practices, by relationships drawn with; UFER (b = -0.177, p<0.01), UFAR (b = -0.157, p<0.001), and 'RFH' (b = -0.161, p<0.001). This suggests that an increase in feelings of positivity whilst feeding, shows a decrease in the likelihood of use feeding practices with their preschool aged child, whereby feelings of happiness and contented made show a reduction in the feelings or need to use such feeding practices. In addition to the relationship with feeding practices, 'positive affect in feeding' has a direct statistically negative association with EUE (b = -0.176, p<0.001), suggesting that a parent feeling positive during a feeding experience is less likely to have a child who emotionally undereats. This is further supported by the relationship between positive affect in feeding and children's 'EF' behaviours with a strong significant positive association (b = 0.257, p<0.001), suggesting that the same feelings of positivity during a feeding time environment is linked to an increase in EF by their preschool aged child.

Research aim c: "Is parents own emotionality during feeding associated with preschool children's eating behaviours and children's emotional eating behaviours?"

In accordance with research aim c' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between LAERS, negative affect in feeding and children's EUE. Focusing on these additional relationships with children's EUE, there was a positive association between LAERS and children's EUE (*b* = 0.153, p<0.001), LAERS was also positively associated with parental negative affect in feeding (*b* =0.261, p<0.01), and negative affect in feeding was in turn associated with children's EUE (*b* =0.175, p<0.001), which suggests some interplay between them (figure 19). Prior to the path analysis, the bivariate correlation between LAERS and EUE was r = 0.178, p<0.001, suggesting that parents inability to regulate their own emotions is positively associated with children's EUE behaviours. Within the fully adjusted model the associations between all of these variables were significant (figure 19) suggesting the negative affect in feeding plays a role in this association and may act as a partial mediator.

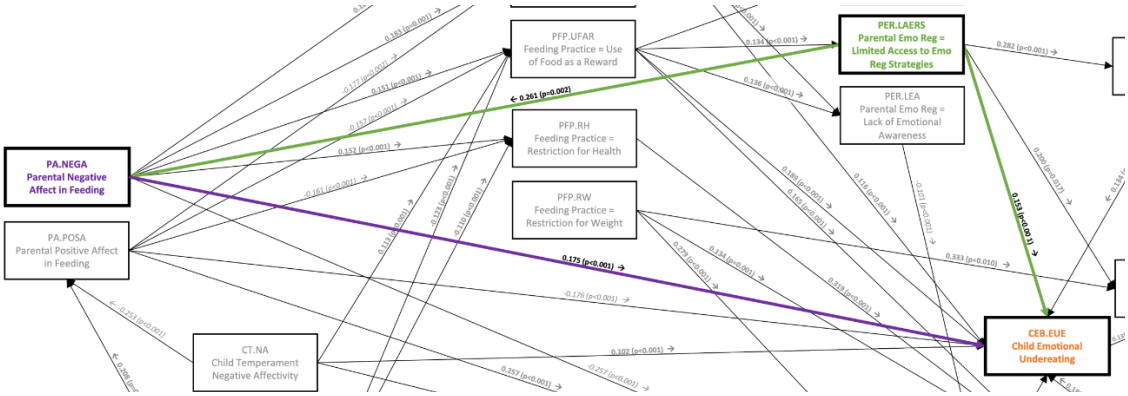

Figure 19: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between Parental LAERS, negative affect in feeding and child EUE (N=1712).

In addition to this, in accordance with research aim 'c' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between positive affect in feeding, EF and children's EUE. Focusing on these additional relationships with children's EUE, there was a negative association between 'positive affect in feeding' and children's EUE (*b* = -0.126, p<0.001), positive affect in feeding was positively associated

with EF (*b* = 0.352, p<0.001), and EF was in turn negatively associated with children's EUE (*b* = -0.151, p<0.001), which suggests some interplay between them (figure 20). This relationship between variables may suggest that both a positive affect in feeding and their EF together have a negative association with children's EUE behaviours.

Figure 20: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between positive affect in feeding, children's enjoyment of food and child EUE (N=1712).

Research aim d: "Are parents' own emotionality during feeding and their own emotional eating associated with their preschool children's emotional eating behaviours?"

The relationship between the parents LAERS and children's EUE behaviour is also very much of interest. In accordance with research aim 'd' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between LAERS, parental EE and children's EUE. Focusing on these additional relationships with children's EUE, there was a positive association between LAERS and children's EUE (*b* = 0.153, p<0.001), LAERS was also positively associated with parental EE (*b* =0.282, p<0.001), and parental EE was in turn associated with children's EUE (*b* =0.134, p<0.001), which suggests some interplay between them (figure 21). Prior to the path analysis, the bivariate correlation between LAERS and EUE was r = 0.178, p<0.001, suggesting that parents inability to regulate their own emotions is positively associated with children's EUE behaviours. Within the fully adjusted model the associations between all of these

variables were significant (figure 21) suggesting the parents EE plays a role in this association and may act as a partial mediator.

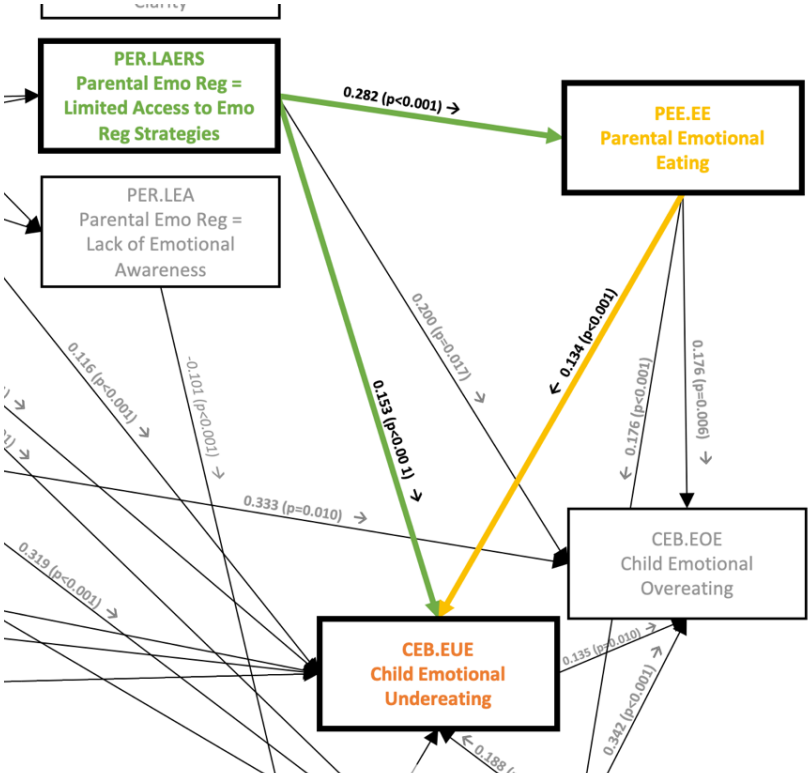

Figure 21: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between LAERS, parental EE and child EUE (N=1712).

In accordance with research aim 'd' (section 4.2.1) associations of the variables within the path analysis suggest a relationship between LAERS, parental EE and children's EOE. Focusing on these additional relationships with children's EOE, there was a positive association between LAERS and children's EOE (b = 0.200, p<0.05), LAERS was also positively associated with parental EE (*b* =0.282, p<0.001), and parental EE was in turn associated with children's EOE (b = 0.176, p<0.01), which suggests some interplay between them (figure 22). This relationship between variables may suggest that both a parents lack of emotion regulation and their own EE together have a positive association with children's EOE.

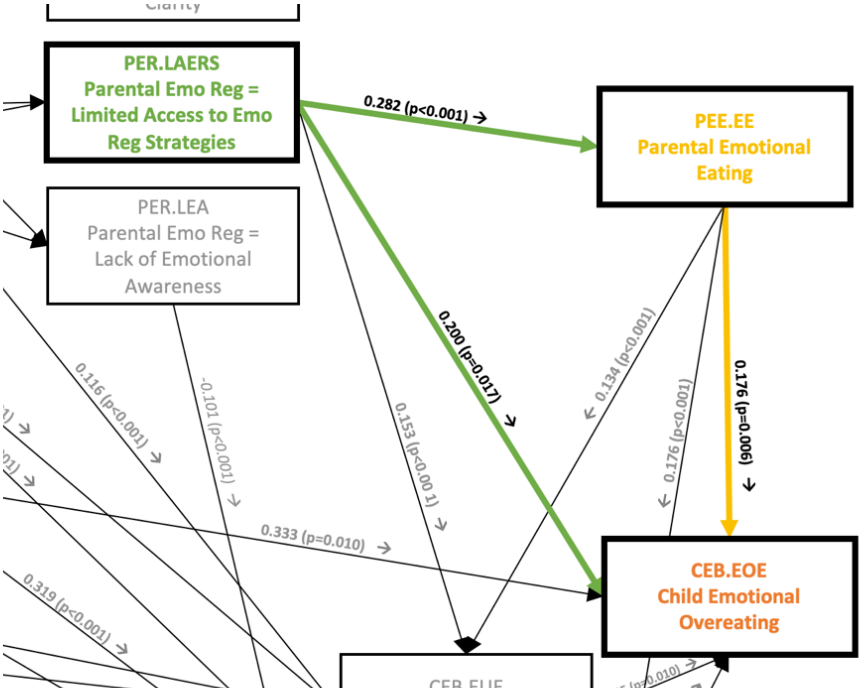

Figure 22: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between LAERS, parental EE and child EOE (N=1712).

4.3.4.3. Child's Emotionality

Childs Emotionality, particularly child's temperament and eating behaviours are seen to have significant associations across the path analysis (figure 14). Regarding children's own emotionality in eating, both EOE and EUE are associated with each other on the path analysis, with b = 0.135, p<0.05. It is also seen as children food approach behaviours; EF and FR are negatively and positively associated with EUE and EOE respectively, with EF negative associated with EUE (b = -0.238, p,0.001) and FR positively associated with EOE (b = 0.342, p<0.001). This suggests that the food approach behaviours are more likely to relate to EOE behaviours as seen in the literature, however it is interesting to see the relationship between EUE and EOE in

reschool children, with an increase of 1 Likert point on the child's EUE increasing the child's EOE by 13.5% or a .68 of a Likert point.

Focusing on Child's own Temperament, particularly their negative affectivity and effortful control drew strong associations within the path analysis (figure 14). Negative affectivity, showing higher levels of anger and frustration, is associated with an increase of the parents the use of UFAR ($b = 0.113$, $p<0.001$) and children's EUE ($b = 0.102$, $p<0.001$), and a decrease in parents 'positive affect in feeding' ($b = -0.253$, $p<0.001$), and children EF ($b = -0.110$, $p<0.001$). This suggests that increased feelings of negativity in the preschool aged child, increases parents use of feeding practices, whilst decreasing parents feelings of positivity while children their preschool aged child. In addition, it suggests that the feelings of negativity in the preschool aged child decreases the child EF, thus increasing EUE behaviours. Effortful control on the other hand, the ability to actively control their own emotions, is associated with a decrease of the parents the use of feeding practices UFAR ($b = -0.123$, $p<0.001$), and 'RFH' ($b = -0.110$, $p<0.001$), and an increase in parents 'positive affect in feeding' ($b = 0.208$, $p<0.001$). This suggests that a child's increased ability to effortfully control their own emotions, is associated with parents feeling more positive during the feeding time environment, and less likely to use particular feeding practices.

Research aim e: "Is there an association between child's temperament and the parents' emotionality with children's emotional eating behaviours?"

In addition to Negative Affectivity and EUE being a direct relationship on the path analysis model, after controlling for all other variables, figure 23 highlights the relationship these and positive affect in feeding. In accordance with research aim 'e'

(section 4.2.1) associations of the variables within the path analysis suggest a relationship between children's negative affectivity, positive affect in feeding and children's EUE. Focusing on these additional relationships with children's EUE, there was a positive association between 'children's negative affectivity' and children's EUE (*b* = 0.102, p<0.001), children's negative affectivity was negatively associated with parental positive affect in feeding (*b* = -0.253, p<0.001), and positive affect in feeding was in turn negatively associated with children's EUE (*b* = -0.175, p<0.001), which suggests some interplay between them (figure 23). This may suggest that feelings of love, warmth and happiness while feeding their child (traits of positive affect in feeding) have an association with the child's negative affectivity and child's EUE. As described from the path analysis model, an increase in child's negative affectivity is associated with a decrease in parents positive affectivity, thus when a child has high levels of anger and frustration, the parent has a reduction in feelings happiness, content and love during the feeding time environment.

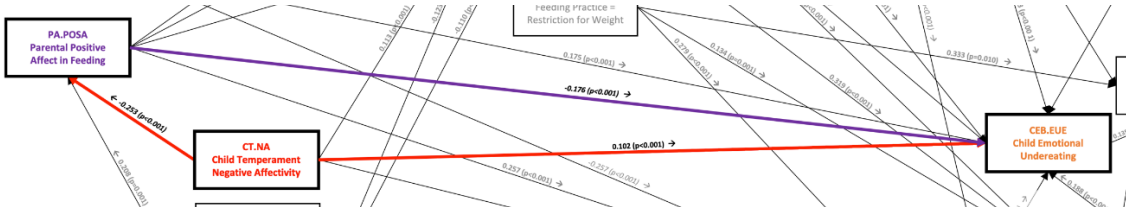

Figure 23: Highlighted 'zoomed in' section of the Path Analysis Model focusing on the relationship between Child's negative affectivity, Positive Affect in Feeding and child EOE (N=1712).

Regarding the relationship Children's Temperament and Children's EOE, there were no direct associations between child's temperament and children's EOE, and only a small association via the complete path analysis (see Figure 13) with small effect sizes of less than 10%, although deemed statistically significant. An example would be a Child Temperament subscale of negative affectivity has a statistically significant but small positive association with Child FR (b = -0.066, p<0.001), which in turn had a strong effect

size and statistically significant positive association with child EOE (b = 0.342, p<0.001), suggested to be due to being both Food Approach behaviours (Section 1.2.1). With this in mind, an increase in a child's negative affectivity, thus having high levels of anger and frustration, may lead to an increase in a child responsiveness to food, a food approach behaviour linked to EOE.

4.4. Discussion

The aim of the present study was to explore the associations between PFP, parents ER, parents affect in feeding, parental EE, child's temperament, and children's eating behaviours, specifically EOE and EUE. This study is the first of its kind to focus on a complex number of factors, both parent and child, in an internationally based study with a sample of 1,712 participants. With previous research looking at one or two elements, such as parent ER (Tan & Holub, 2015), child temperament (Hughes & Shewchuk, 2012), and PFP (Kroller et al., 2013) with children's eating outcomes, this study to the authors knowledge is the first to explore all factors combined, focusing specifically on preschool EE behaviours whilst controlling for covariates and confounding variables.

4.4.1. Summary of Findings

The path analysis highlights the importance of a number of factors, in addition to and including, parent feeding practices and child EE research by presenting a complex exploration of how parents and child's emotionality is related to the relationship of EE.

The findings uncover the significance of emotionality within the cycle of feeding and eating behaviours. Relationships within the path analysis, although unable to infer causality, highlight child temperament is associated with the parent's actions and behaviour. This idea of child own individual traits, their temperament, may be associated with parents behaviours is supported by previous literature. Black and Hurley (2017)

discuss how parenting behaviours, often characterised by PFS and PFP, may vary due to the child's characteristics for behaviour. A systematic review supports this, as parents are suggested to use more restrictive parenting behaviours on children characterised as having a difficult temperament than children perceived as easy or agreeable (Bergmeier et al., 2014b). This idea of the child's characteristics and temperament being the stimulus and the parents behaviour the response is supported by research comparing sibling behaviours (Farrow, Galloway & Fraser, 2009). Farrow and colleagues (2009) found parents adapted their feeding practices used dependent on the behaviour of the child, with greater use of such PTP as PTE on children showing food avoidance behaviours such as food fussiness, slowness in eating and EUE. This cross-sectional study however, cannot infer causality and thus the use of PTE and children's food avoidance behaviours could be bidirectional in nature. The path analysis supports the argument of this relationship, with difficult temperament associated with less positive affect in feeding, higher use of restrictive and PTE feeding practices, less food approach behaviours, and more child EUE. Conversely, an easy or agreeable child temperament is associated with more positive affect in feeding, less use of restrictive or PTE feeding practices, and less child EUE.

The remainder of the discussion focuses on each element within the path analysis; emotionality, affect in feeding and emotional eating, and their use of particular PFP and their practical implications on children's eating behaviours, specifically EOE and EUE.

4.4.1.1. Emotionality

The overarching findings within the path analysis (figure 14) focus on the relationship between Emotionality from both Parent and Child, and its relationship within feeding practices and eating behaviours, specifically EE. It can be suggested from the path

analysis that both emotion regulation and temperament, from parent and child respectively, plays a fundamental part in the use of feeding practices and association with EE behaviours.

Firstly, focusing on Child Temperament, higher levels of preschool children's negative affectivity are associated with lower levels of parental positive affect in feeding, with parents feeling less happy and calm within the feeding environment. Conversely, higher levels of child effortful control, a subscale of child temperament associated with regulation of emotional reactivity and behaviour, are associated with higher levels of parental positive affect in feeding. Higher levels of positive affect in feeding are associated with lower levels of the PFP; UFER, UFAR and Restriction for Health; of which latter two are associated with children's EE behaviours. This relationship may suggest that parents with children who have a difficult temperament may feel less positive affect in feeding, and use more PFP associated with preschool children's EE behaviours. It must be noted due to the cross-sectional nature of the study, the findings may be also noted as bi-directional in nature, with potentially the use of PFP associated with children's EE behaviours also associated with a less positive affect during feeding and a child's difficult temperament.

In addition to the association between Positive Affect in feeding and PFP, Positive Affect in Feeding is also directly negatively associated with Children's EUE behaviours, and positively associated with Children's EF, a food approach behaviour negatively associated to EUE. Children's temperament is also shown to be directly associated to the use of PFP, with higher levels of Negative Affectivity associated with more UFAR, and higher levels of Effortful Control associated with less UFAR and Restriction for Health. This suggests that the child temperament plays an integral part of the affect in feeding, the use of PFP and preschool children's EE behaviours.

Secondly, focusing on parent emotion regulation, parents LAERS holds a positive association with both parents EE behaviours, and children's EUE and EOE behaviours. This suggests that as parents lack strategies to regulate their own emotions, they may themselves turn to food to regulate their own emotion, as well as their children. This is supported by the positive association between parents LAERS and parental negative affect in feeding, suggesting parents who lack access to strategies to regulate emotion may feel more anxious and overwhelmed in the feeding environment, and thus use tools and PFP associated with children's EE behaviours. In summary our path findings suggest that parents and child's emotionality, the ability to use and access strategies to regulate their emotions, has a relationship with the feeding strategies and practices used, and the appearance of EE behaviours, particularly with EOE and EUE in preschool children.

4.4.1.2. Affect in Feeding

How parents therefore feel in the feeding environment is an important aspect to consider, as positive affect; feelings of love, contentedness, reward and happiness have been suggested to have a positive impact on parent-child interactions and the children's own emotional wellbeing (Frankel et al., 2015; Teti et al., 1995). As described previously (section 1.3.3), positive feelings of affection within the family environment are negatively associated with EUE behaviours, yet negative feelings within the feeding environment was positively associated with highly controlling feeding practices, and maladaptive maternal and child EUE behaviours (Hughes et al., 2011; Topham et al., 2011). This is supported not only in the literature but also highlighted within the current study finding negative affect while feeding was positively associated with the use of restrictive and controlling feeding practices. This may be suggested as parents who have negative

feelings such as feeling overwhelmed, anxious and rejected during feeding are more likely to use feeding practices to attempt to control the environment.

Whilst how the parents feel during the feeding environment is important, how the parents deal with the emotions they feel may also be an important area to consider. During a negative feeding experience, if one was able to find a way to access their own regulation strategies, the emotion may not become overwhelming in the feeding environment. However, if one struggles to regulate their emotions, a negative experience may be exacerbated as the parent is unable to regulate their own emotion, thus feeling the negative feelings as described previously (Frankel et al., 2015). With the findings from the current study suggesting that parents unable to access strategies to regulate their own emotions more likely to feel negative feelings during feeding, this negative feeding environment has been associated with maladaptive eating behaviours, highlighted within the current study and supported by previous research (Hafstad et al., 2013; Rodgers et al., 2014).

4.4.1.3. Emotional Eating

When focusing on the relationships with EUE, our findings suggest that the relationship between PFP and children's EUE is linked to the emotionality of either, or both, parent and child. The path analysis infers that parents with a positive affect within the feeding environment are less likely to use restrictive or controlling feeding practices, have a child who is more likely to enjoy food and less likely to emotionally undereat. This finding adds to the literature, with very few studies focusing on parental affect in the feeding environment and of those the focus lies on negative affect. Negative affect, being the contrasting factor to positive affect, has been found in previous literature to link to more

use of controlling feeding practices (Hughes et al., 2011) and food avoidant behaviours such as picky eating (Hafstad et al., 2013).

Parents who have limited ability to regulate their own emotions, are more likely to show negative feelings within the feeding environment, more likely to use controlling and restrictive feeding practices, have a child less likely to enjoy food and more likely to show EUE behaviours. Once again, these findings are novel as previous research has not combined all factors together and explored the relationship between them. Focusing on the emotionality of the child themselves, a child high in anger frustration and negative emotion states is less likely to have a parent who feels positive in the feeding environment, more likely to have controlling and restrictive feeding practices used and more likely to show EUE behaviours. However a child high in abilities to control their own emotions is more likely to have a parent who feels positive in the feeding environment, less likely to have controlling and restrictive feeding practices used and less likely to show EUE behaviours. This is supported by a cross-sectional study by Haycraft and colleagues (2011) finding that children with a difficult emotional temperament were more likely to show food avoidant behaviours such as EUE.

Focusing on EOE, our findings suggest that the relationship between PFP and children's EOE is linked less via emotionality regarding the feeding time environment and more regarding the parents use food for non-nutritive purposes. Parents who struggle to access strategies to regulate their own emotion are more likely to have used food as a reward, are more likely to emotionally eat themselves and more likely have a child who also shows EOE behaviours. Tan and Holub (2015) conducted a cross-sectional study, finding that when a child is upset or in distress, parents who then have difficulty in regulating their own emotions may use of emotional feeding practices, such as 'use of food to soothe' or UFER, which themselves link to EOE behaviours. In addition, parents who use restrictive feeding practices are more likely to have a child who responds to

food based cues, enjoys food and shows EOE behaviours. This may be due to parents having limited access to other ER strategies other than EE, thus attempting to use restriction as a way to control the weight in their preschool aged children. This finding is supporting in the literature as Birch and colleagues (2003) conducted a 4 year longitudinal study finding the use of maternal restrictive feeding practices linked to eating in the absence of hunger and higher weight status in girls 2 and 4 years later. This is further supported by the data (table 9) as parents who emotionally overeat are more likely to have a significantly higher BMI themselves, and may use restriction for weight as a way to reduce the likelihood of their child gaining weight also.

4.4.2. Strengths and Limitations

Firstly, the current study was cross-sectional in nature, and so did not allow for causal explanations among the variables. The path analysis theoretical diagram was created using previous theory, findings and literature. With this in mind it is certainly a possibility that parent and child behaviours can in fact be bidirectional in nature, with such example as the positive and negative affect in the feeding environment being associated with a decrease and increase EUE behaviour respectively. However one could argue that having a child with EUE behaviours within the feeding environment may reduce positive feelings and increase negative feelings when it came to affect during feeding. A substantial amount of research has already suggested that feeding practices are in fact bi-directional in nature, with individual parent and child characteristic likely to have this relationship also. Research shows that parents adapt their feeding practices to suit the characteristics of their children, and children's eating behaviours may change alongside their parents feeding practices (Harris et al., 2016; Jansen et al., 2017). Future research could consider a longitudinal, observational or experimental research design to better

understand the complexity of the relationship between parent and child's emotionality and eating behaviours.

Secondly, discussion around the alpha level at $p<0.05$ may be viewed as a limitation to the path analysis study. Due to the exploratory nature of the study, the alpha level was kept at $p<0.05$ to explore the data and relationships highlighted. Due to this, practical significance was discussed using effect sizes as a measure of magnitude. To account for the broad alpha level of $p<0.05$, the results were interpreted in the context of practical significance, so not to include or remove a relationship if the magnitude of the relationship is miniscule, but instead focus on its practical significance within the research. Nevertheless, it is advocated that further research could progress this broad, exploratory work and address more specific hypothesis, including modelling approaches that have been adjusted according to the principle of multiplicity. Future research may, for example, focus on sub-groups within the sample, assessing these with post-hoc analyses and a more stringent alpha level.

Another limitation of the study is the self-report measures and purposive sampling strategy when recruiting participants to take part. A poster (appendix 8.3) advertisement was sent out to local nurseries and childcare centres, as well as through parenting social media avenues on Facebook, twitter and Instagram. The social media recruitment gained much attention, being shared across numerous groups and pages. The advert (section 4.2.3) asks for parents who are willing to fill in a questionnaire about parents feeding and children's eating behaviours, thus parents who either have an interest in this area, or have challenges and thoughts regarding this area of research are more like to fill in the questionnaire. In addition to this, parents were asked to fill in the questionnaire regarding them, and their preschool aged child. As well as the normal issues regarding self-report, such as responder bias with parents filling what they believe the researcher

may be looking for, parents were also filling in the questionnaire on behalf of, and regarding, their preschool aged child. This is due to the inability for the child to understand or complete the questionnaire themselves due to their young age, thus the child's behaviours must be interpreted by the parent themselves. This may be a challenge when discussing sensitive topics such as childhood EE, if the parent themselves have tendencies of for example, EOE, they may not think their child's behaviour is anything away from the ordinary, thus reducing the likelihood to mark their child as an emotional overeater. However it must be noted that the use self-report cross-sectional questionnaire data, the study was able to collect a much larger international sample (N = 1712) of parents than probable with any other type of data collection, and gave the parents the chance to complete the questionnaire at their own convenience.

Regarding the sample of parents, it must be noted a limitation of the study is the large number of Caucasian, highly educated, female respondents completing the study. Although the study was sent out to everyone, including a fathers parenting group, the respondents were very much of one particular cohort of mothers, with only 1.1% of respondents being the father of the child.

4.4.3. Practical and Clinical Implications

The study begins to explore the relationship around parent and child emotionality and its relationship with parental feeding practices and EE behaviours. These findings will support the development of future causal studies to investigate the directionality between these factors. The practical use of these findings would help to guide future research into parenting practices that may support interventions surrounding parents understanding of their emotionality in and out of the feeding environment with how their child reacts in the given situation, and the emotional climate during this time. It must be noted however that within the current research notions that purely suggested, as the path analysis is cross-

sectional so one must be mindful that causality cannot be established. The bidirectional relationship therefore may be as equally important within the practical implications. If parents then, for example, understood that the emotionality and temperament of their child related to how they feel and thus the feeding strategies used with their child, it may be a more transparent and positive experience. The use of the path analysis findings could support a development of modification of an intervention into to parent feeding challenges with their preschool aged child, and enable parents to discover and adapt responses to create a calm and positive feeding experience. Due to the path analysis finding both an increase in child negative affectivity in addition to the parents inability to regulate their own emotions, the findings used in a practical element could provide parents with knowledge, tips and strategies to overcome this. With emotional feeding and eating behaviours associated with higher weight status in both adults and children, the use of these specific findings could provide additional support public health interventions, addressing the element of emotionality within feeding and eating behaviours.

4.4.4. Conclusion

Despite these limitations, the current study's findings demonstrate complex processes in the association between parents and child's emotionality, PFP, and the salience of EE behaviours in preschool aged children. Specifically, the findings highlight the importance of emotionality within the use and development of feeding and eating behaviours. Results suggest that emotionality, be it parent's abilities to regulate their own emotions and the children's individual temperament characteristics, are associated with parent's actions and behaviours and children's emotional eating behaviours. This integrated path analysis model highlighted a good fit to the data and whilst controlling for all variables showed statistically significant pathways between; parent affect in feeding and child

temperament on the use of feeding practices, parental ER and parental EE on the children's food approach and food avoidance behaviours, and the use of feeding practices and parental ER on children's EOE and EUE behaviours. This study represents a novel area of research, and the findings themselves have important implications for researchers and clinicians interested in the parental behaviours that lead to, or are part of, the development of preschool aged children's maladaptive eating behaviours.

5. Qualitative Interview Based Study "Exploring Parental Emotion Regulation and Child Temperament: a qualitative study of the use of Parental Feeding Practices and Preschool Children's Emotional Eating."

Abstract

Focusing on parents own experiences of emotionality, feeding and emotional eating in their preschool children (aged 3 to 5 years), a qualitative semi-structured interview study with 21 parents was conducted to illuminate the findings from the previous path analysis (chapter 4). Following COREQ (Consolidated criteria for reporting qualitative research) guidelines, a thematic analysis was conducted, and found the themes; 'The Mealtime Battleground', 'Food for Non-nutritive Purposes', 'The Mirroring of Emotional Eating', 'Who's in Charge', 'Realisation of Behaviours', and 'The Catalyst of Emotion'. The results underline the importance of a positive and calm family feeding environment for both parent and child to elicit beneficial feeding practices and behaviours. The findings have implications for the development of parenting and child feeding support and interventions, understanding that parents' emotionality, as well as children's individual characteristics and temperament are salient within the parental decision making to use certain feeding practices and behaviours.

5.1. Background and Rationale

The findings of the systematic review and meta-analysis (chapter 3) and the quantitative cross-sectional study (chapter 4) have highlighted several consistent ideologies within the understanding of parental factors that might influence differences in the development of EE in preschool aged children. These included restrictive and controlling PFP, PFS, parents' emotion regulation and their affect in the feeding environment. Particularly, in the path analysis (chapter 4), it was also discussed how child factors may have a part to play within the usage of these parental behaviours that are suggested to be a stimulus in the salience of EE behaviours. This was more specifically the child's own temperament in and out of the feeding the environment, and how their behaviour may adapt the practices that parents have to use on their preschool aged child. These areas researched within the quantitative study, specifically using a cross-sectional design, allows suggestions to be drawn regarding the relationship and patterns within the data. What cross-sectional and quantitative cannot tell y

As is previously discussed (Section 1.3.1), parental feeding practices (PFP) have been suggested to be a contributing factor to the development of such behaviours as children's EE. Much of research focusing on the preschool children's EE, including the previous path analysis (chapter 4) on the complex interplay between parent and child factors quantitative in nature on the parent and child emotionality and the development of EE has been quantitative in nature (Gouveia, Canavarro & Moreia 2019; Powell, Frankel & Hernandez 2017; Tan & Holub 2015). Only a small number of studies have looked at PFP from a qualitative stance (Carnell et al., 2011; Hayter et al., 2013; Pescud & Pettigrew 2014), finding that parents have discussed such themes as 'Parental engagement with children eating behaviours' and 'fussy eating'. However, to date there

have been no qualitative investigations on the emotionality of parents and child, and its impact on PFP and children's eating behaviour, specifically, EE.

The present study will therefore explore the parents own experiences regarding their own ER and their feeding practices. It will also illuminate the findings from the path analysis, attempting to provide a deeper understanding of the paths and relationship salient not only in a questionnaire element but also from a parents perspective. It will ask parents to reflect on how their experiences feeding their child play out on the environment, the child's temperament and their eating behaviours, in and away from the feeding environment. It aims to address the *why* and *how* that previous research in this field has not yet addressed, aiming to illuminate gaps in the existing knowledge about how emotionality plays a part in the relationship between PFP and eating behaviours, specifically the maladaptive behaviour of EE.

5.1.1. Aims

The primary aim of this research is to explore the meaning and real world experiences of parents and their feeding challenges with preschool aged children. In particular, the study focuses on illuminating the relationship and understanding regarding the use of PFP and emotionality, and the interaction with children's temperament and EE behaviours. The aim of this qualitative study is to provide a better understanding of the area in which parents find themselves within the feeding environment, illuminating the findings from the path analysis and giving an explanation of not only what the parents report in the questionnaires, but how they feel and the salience of their emotions within the feeding environment. As discussed in the research aims and questions (section 1.6.1.1) this qualitative study aims to explore parent's own experiences regarding feeding and emotions within the development of EE in preschool aged children.

5.2. Methods

5.2.1. Design

Due to the exploratory nature of the qualitative research focusing on parent and child's emotionality and their experiences with feeding practices and EE behaviours, a methodology that allows ideas and discussion to emerge was adopted. A semi-structured interview was used, consisting of open questions and prompts to allow for participants to explore and develop their own thoughts and experiences within the interview. Face to face interviews were conducted, allowing for a richness of data and the opportunity for the parents to feel comfortable sharing their thoughts and experiences to an interviewer in a place of their choosing. Face to face interviews have been discussed as beneficial for interviews lasting longer than 30 minutes, and increases the likelihood of a participant to answer conscientiously and along with visual feedback, allows for more extensive narrative and potentially more depth of information (Irvine, 2011; Schober, 2018). The interviews were conducted in chronological order on parents agreeing to take part, until a level of saturation was reached (Ritchie, Lewis & Elam, 2003; Saunders et al., 2018). According to and Strauss (1999), data saturation infers that the addition of more participants to the data collection would not add anything additional to the analysis. Having been defined within elements of the grounded theory, the termed has since been coined across other elements of qualitative analysis, not necessarily within the grounded theory context but across interview and focus group methodologies until 'saturation' has been reached (Malterud, Siersma & Guassora 2016).

5.2.2. Interview Recruitment

The qualitative participants were recruited from the same pool of participants originally recruited from the quantitative study (section 4.2.2). A box at the end of the questionnaire asked them to add their details if they would wish to be further contacted regarding a future study. The inclusion criteria thus matched the criteria set out for the quantitative study (section 4.2.2), being adult participants and the primary caregivers of the 3 to 5 year old children, and had no underlying health conditions that would affect weight or food consumption. They were also required to be able to read, write and speak English, due to the questions answered in the quantitative study (chapter 4), and the possibility they would be included in this interview study. Due to time constraints during the recruitment procedure, children of parents who were 5 during the quantitative online questionnaire (chapter 4; September 2018 to January 2019) may have turned 6 and thus excluded from the recruitment pool by the time the qualitative data collection began in September 2019. The participants who gave consent to be contacted for the qualitative interviews were then organised via a 30 mile radius of the research centre, and contacted systematically.

Of these participants who had agreed to take part in both studies, a radius was drawn around Coventry University with a distance of 30 miles. This location was set for the participants within the qualitative study, therefore still recruited via the previous sample from the quantitative study (chapter 4) but filtered by a proximity location of 30 miles radius from Coventry University (actual range 5.6 to 21.4 miles, mean 16.15 miles). This was due to the face to face interviewing of participants, and therefore the proposed time constraints of data collection and travel arrangements for one researcher to travel to

each of the participants' addresses, meaning at the furthest distances the researcher would be travelling a maximum of 2 hours a day. Due to this proximal availability, 29 participants were contacted regarding their availability for the qualitative interview study. Of the 27 parents who replied to the email stating they were happy to take part, the interviews were booked in and completed on a first-to-respond basis via email. 78% (n = 21) of respondents who agreed to take part took part in the interview, with 6 being delayed in their availability due to time, holidays or previous engagements. After the 21st interview, the interviewer felt that of the interviews completed and the data collected, no new themes and concepts were arising from the data, thus found that saturation point had been reached (Saunders et al., 2018). The respondents were all thanked for their interest, and interviewees were given a £10 Love2Shop voucher for their time.

Of each of the participants that agreed to take part in the study, they were asked their next availability slot and address of the place they would like to meet, whether it be their home or a place convenient to them. They were booked into the calendar and sent a reminder email evening before to ensure the interview was still going ahead, and confirmation was made before the researcher made the journey. Starting on October 2nd 2019, the researcher completed all 21 interviews in 13 working days, with the last one completed on the 19th October 2019. 18 of the 21 interviews were completed in the family home, and 3 were completed outside of the family home with 2 in a local coffee shop and 1 in a community centre. Once arriving, the researcher ensure that the parent was still happy to go ahead, found a quiet space to complete the interview and asked them to read the participant information sheet and complete the consent form and demographic questionnaire. Once they were asked if they had any questions and consented verbally to being recorded, the interview was started. Once the interview had finished, the researcher asked if there were any questions, gave the participant their contact details and debrief sheet, along with the vouchers as a thank you for their time.

5.2.3. Data Collection

Data for the qualitative interview based study was collected via interviews at the participant's home or a place convenient for themselves, recorded on two devices, and transcribed in verbatim. The participant was once again asked to complete a demographic questionnaire split across 2 pages, which included information about themselves (parents), their household, and their preschool aged child. This would have been the second time the participant would have been asked to complete the demographic questionnaire, however due to the anonymity of the quantitative questionnaire, it would not be possible to match the data to their previous completion. The semi-structured interview included 22 main questions with additional prompts; 6 main questions regarding PFP, 3 main questions regarding parental eating behaviours, 3 main questions regarding parent affect in feeding, 6 main questions regarding their child's eating behaviours, and 4 main questions regarding their child s temperament. Each interview (n = 21) lasted a mean of 48 minutes and 45 seconds (range between 26 minutes 25 seconds and 99 minutes 30 seconds) with 4 lasting over an hour in length. The data was exported into NVIVO 12, a software program used for qualitative analysis of unstructured text including interviews and focus groups.

The interviews were carried out with a realist research practice (Swift & Tischler, 2010). Throughout the interviews I summarised the key points covered to establish whether I had correctly interpreted the participant's experiences allowing for further exploration of their experiences. Participants were also offered a chance to return to an area discussed, or to add to their answers throughout, and were provided an opportunity again at the end of their interviews to discuss anything else they feel they may have missed or not had the chance to explain to their satisfaction.

5.2.4. Interview Questions

The interview schedule was created with a topic guide of key questions and probes to explore the area of interest. Four main sections of the interview focused on; PFP, parental ER and eating behaviours, child's temperament and child's eating behaviours. (Appendix for Interview Schedule). Parents were first asked to describe an average mealtime experience with their preschool child and any challenges they face over this time. Additional probe questions elicited further detail about the emotionality around the dinner table or feeding environment, the use of prompts, practices and behaviours used with their preschool children, and their understanding of their and their child's eating behaviours.

5.2.5. Procedure

Ethical approval was obtained from the Coventry University Health and Life Sciences Ethics committee. All interviews were conducted face-to-face at a place convenient to themselves; 18 parents chose to interview at their home, and 3 chose public places convenient to themselves whilst being quiet to conduct and record an interview. The parents were told the interview should take approximately 30 minutes but had no maximum time constraints. RM conducted the interviews with the participants, with only the interviewer (RM) and the participant present during interviews. 8 out of the 21 participants also had a child present, mostly an infant, with only 1 parent having the child to whom the interview was about, although the child was in the adjacent room watching television.

The parents were emailed the morning of the interview as a reminder and ways to contact if they needed to rearrange or cancel. Before the Interview began, participants were

asked to read an information sheet about what the interview would involve, and invited to give consent if they wish to continue. Before the interview began, they were asked to fill in a demographic questionnaire about themselves and their preschool aged child, including self-report of height and weight for both parent and child. On completion of the consent form and demographic information the researcher gained verbal agreement the participant was happy to be voice recorded, using two devices to ensure no technological failure, and the interview would then begin. The interview schedule can be seen in appendix 8.9. At the end of the interview the participant was given the debrief sheet that contained the researchers contact details if they would need to get in touch after the interview, alongside a voucher for their time.

5.2.6. Data Analysis

Braun and Clarke's (2006) procedure for the use of thematic analyses in psychology research was used to analyse the interview data. Although the path analysis was used to structure the semi-structured interview schedule (see appendix 8.9 for Interview Schedule), a data driven thematic approach was used for the analysis of the interview data, with the themes derived from the data itself instead of being slotted within a framework.

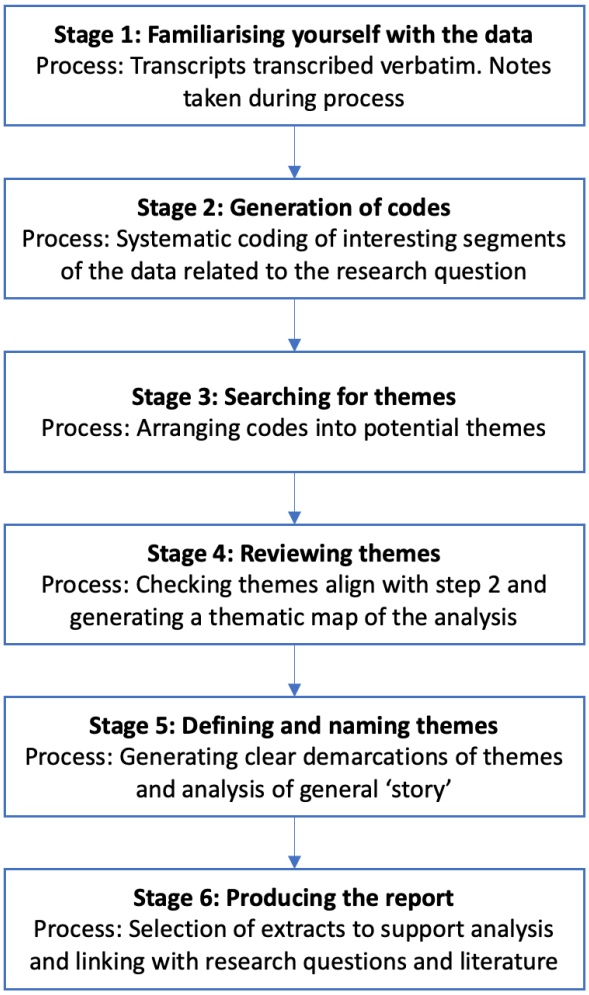

Figure 24: The six stages of analysis adapted by Braun and Clarke (2006)

Data analysis took part in six distinct stages (figure 24). Firstly, data were first transcribed verbatim and then coded into the basic elements found within the data. The researcher then listened to each audio recording whilst reading through the transcription to check for errors and understanding. The data was then reread to identify the initial themes and the transcription coded to reflect these basic themes. After all data was coded, the thematic analysis took place. Codes were then organised into similar patterns, preliminary themes found across the data, and highlighted into categories of both parent and child physical and emotional behaviours. Example of NVIVO coding can be seen in appendix 8.10. Preliminary themes were then reviewed and merged into themes and

subthemes. Codes and themes were reviewed by two researchers (RM and KC), with the first researcher (RM) analysing the complete set of 21 participants, and reviewed by and discussed with a qualitative researcher and second reviewer (KC) for any discrepancies within the themes and coding.

The idea of trustworthiness, as described first by Lincoln and Guba (1985) involves the need for; trust value, applicability, consistency and neutrality of the data. In order to enhance the trustworthiness of the data, transcripts were checked and reread several times with and without listening also to the recording, searching for similarity across the data. Direct quotes from the data are used to discuss and support the themes presented in the results below. To ensure applicability of the data, demographic details of the participants were recorded to avoid over generalisation of the findings. Consistency was supported by ensuring the aims of the study were followed throughout, and the participants met the inclusion criteria (insert section for this) and the methodology was followed clearly for each participant. Finally, neutrality was ensured by checking the codes alongside another researcher who was independent from the data collection.

5.2.7. Reflexivity

The role of a researcher within qualitative research involves an understanding that the researcher is fundamentally the central figure who collects, selects and interprets the data from the participants and the findings (Finlay, 2002). Through reflexivity, researchers must acknowledge not only how they interpret the data may be influenced by their own feelings toward the topic area, but also the changes brought about in themselves as a result of the research process (Palaganas et al., 2017). Qualitative analysis involves an element of subjectivity and reflexivity where the findings are actively questioned and thought out at each step within the research process, instead of seeing

them at face value. Being able to defend the integrity and trustworthiness of the qualitative findings, it is important for researchers to understand how subjective and intersubjective elements may influence their interpretation of the results. Meanings and elucidations within the data are seen to be negotiated between researcher and the researched due to the context in which both find themselves (Finlay, 2002).

To ensure the integrity of the qualitative findings throughout the qualitative data collection and analysis of results, I have engaged in note taking and a reflection in a reflexive diary after I had completed each interview before I continued on with my journey back to the research centre. This allowed myself to engage in personal reflexivity, highlighting the salient areas of discussion and my role within the interview process. I reflected on the questions and prompts asked, not just the interview schedule but the way in which the questions were phrased. I also noted the experience and environment in which the interview was conducted, and the attitude and mannerisms I found reflect from myself and the interviewee regarding the sensitivity of the topic.

5.3. Results

5.3.1. Sample Characteristics

Of the 21 participants that took part in the interviews, the majority were females between the ages of 24 and 39 years old, with the average mean (SD) age in years being 33.25 (5.01). Most the participants were white (87.5%) and highly educated, with 87.5% having at least been to university and 57.1% of these continuing on to post-graduate education. The majority of the participants were married (87.5%), 100% being the biological parent of the child, and the majority of parents (50%) were in part-time employment. Within the

household, the number of children ranged from 1 to 3 children in the family, with a range of 1 to 2 children in each family being of preschool age. 25% of the household had children under preschool age, ranging between 14 and 16 months of age.

Children were all aged between 3-5 years old, with a mean (SD) child age of 4.25 (0.71) years old, and 62.5% of the preschool aged children were female. Of the children being discussed in the interview, 37.5% were the youngest child, 50% were the oldest child, and 12.5% were an only child. Additional demographic information can be seen in table 11.

Table 11: Additional Demographics

Parents

Age	Mean (SD)	34.57 (4.98)
	Range	24 - 43
Gender	Male	4.8%
	Female	95.2%
Ethnicity	White British	80.9%
	White Other	9.5%
	British Asian	9.5%
Height (cm)	Mean (SD)	164.30 (4.67)
	Range	152 - 170
Weight (kg)	Mean (SD)	72.28 (14.88)
	Range	57 - 125
BMI	Mean (SD)	26.84 (5.65)
	Range	20.94 – 45.91
BMI Categories	Underweight (<18.5)	0%
	Normal Weight (18.5-24.9)	47.6%
	Overweight (25-29.9)	28.6%
	Obese (30-39.9)	19.0%
	Morbidly Obese (>40)	4.8%
Education Level	High School	9.5%

	College	9.5%
	University	52.4%
	Post-graduate	28.6%
Employment	Unemployed	19%
	Part-time	61.9%
	Full-time	19%
Children in household	Total no. of Children	1 - 4
	Preschool Children	1 - 2

Preschool aged Child

Age	Mean (SD)	4.05 (0.74)
	Range	3 – 5
Gender	Male	52.4%
	Female	47.6%
Height (cm)	Mean (SD)	105.08 (6.43)
	Range	92 – 118
Weight (kg)	Mean (SD)	17.45 (2.63)
	Range	14 – 25.4
BMI Z Score	Mean (SD)	-0.02 (0.89)
	Range	-1.18 – 2.04
BMI Weight Categories	Underweight (<5%)	21.4%
	Normal Weight (5-85%)	64.3%
	Overweight (85-95%)	0%
	Obese (>95%)	14.3%
Child placement in Family	Youngest Child	42.6%
	Middle Child	14.3%
	Oldest Child	38.1%
	Only Child	4.8%

5.3.2. Reflexive Account

For a number of years, I was employed as a school based healthy-eating co-ordinator in and around the West Midlands. I conducted assemblies and workshops working with primary school aged children on fruit and vegetable intake and healthy eating. My research interest began in the area of children's eating behaviours, and more specifically the parental role, when I began to design and deliver parent workshops on healthy eating. In my own opinion I found barriers to healthy eating were salient such as; parental knowledge and understanding of healthy foods, culture and family issues in cooking for the family, the unaffordability of healthy foods and the child's unwillingness to consume it. These informal parent workshops created discussions between parents regarding their issues and examples of eating challenges with both themselves and their children in and away from the family home. Listening to the issues and areas parents are facing gave me insight into the feeding and eating environment, and this built my interest around the practices and factors that are associated with children's eating behaviours at a young age.

I was mindful that I am a researcher discussing parents' practices and behaviours, and the feeding experiences with their children, when I myself do not have children. I was asked a couple of times throughout the interview process whether I myself had children, which could highlight an issue with researching an area to which people assume you have just theoretical knowledge and not practical experience. Bearing all of this mind, the qualitative research was an illuminating and positive experience. It allowed me to discuss in more detail the topic area in which first drew me to my interest of parents' experiences and behaviours that are associated with children's eating behaviours.

5.3.3. Themes Identified

The thematic analysis of the data revealed six themes which explore the role of PFP, emotions within the feeding environment and the development of EE behaviours in preschool aged children.

The findings suggest a child's individual differences in character and temperament, as well as the parental ability to regulate their own emotions, may drive the usage of particular feeding practices and development of EE behaviours. One parent articulated:

> "*I did not parent them differently. I have learned to not immediately assume it's the fault of the parenting because one minute I thought I was an amazing parent, the next minute I realised he was an amazing child and it wasn't really anything to do with my parenting. Parents may instil their bad habits yes, but the issue I think with kids is their own little personality." (P21).*

The six major themes include; (1) the mealtime battleground, (2) Food for Non-nutritive Purposes, (3) The Mirror of Emotional Eating, (4) The Element of Control, (5) The Catalyst of Emotion, and (6) Realisation of Behaviours. Each of these themes have between three and six sub-themes with results presented under these headings, and subsequent sub-headings as highlighted in Figure 25.

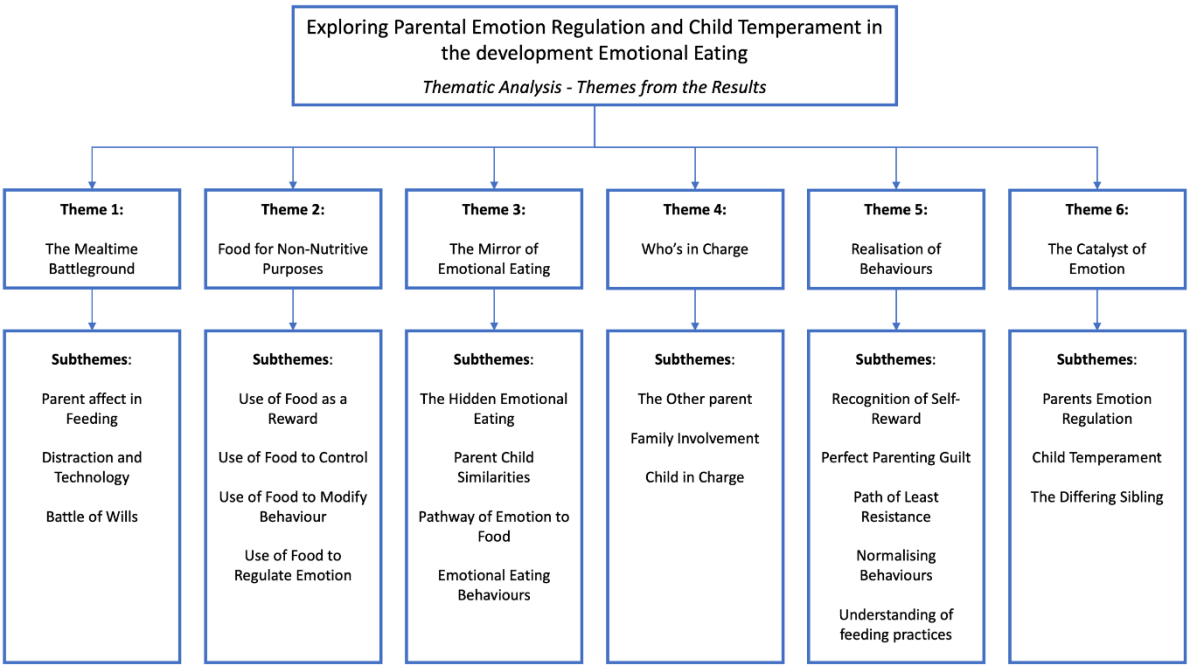

Figure 25: Themes identified from the Thematic analysis (n = 21).

5.3.3.1. Theme 1: The Mealtime Battleground

The first theme the "Mealtime Battleground" derived from parents' discussion surrounding the dinner table or eating area. Parents discussed the emotional challenges they themselves faced whilst trying to feed their preschool child, alongside the challenges battles and frustration during that specific time. Highlighted within the theme is the battle of wills between parent and child, and the discussion surrounding the element of compromise and bargaining with the child to eat. Alongside the emotional element of the battleground, parents also discussed the use of technology at the table during a feeding or mealtime, and how it either aided or hindered the environment.

5.3.3.1.1. Parent affect in Feeding

With feeding and mealtime being a regular occurrence in the home, how the parents feel is important this experience. Having a positive affect in feeding environment makes the parents feel involved, loved and needed, whereas a negative affect in feeding makes the parent feel anxious, stressed, upset. Parents described how the negative affect in feeding can impact of the rest of the atmosphere:

> *"Probably stressed, annoyed because sometimes I've just spent a lot of time on the food, if I've been in there cooking for an hour, I really just want to sit down and we'll all eat it, and then she starts, it's such a battle. It's really frustrating but-- It can make us all a bit on edge at the table, definitely strained, when it doesn't need to be. She makes it like that. Definitely--that's it then because it puts us into a bad mood. If my oldest child then wants to tell me about something, I might get snappy with him and just-- It can be a stressful time." (P18)*

Many parents discuss how the frustration during the feeding time is linked to the child's apparent dislike for the food they have spent time making. Using the words 'spent ages' (P12), 'slaved over' (P16), 'put effort in to' (P7), 'wasted my time' (P21), to describe the cooking and preparation of dinner, parents find it frustrating then when the child will not eat it:

> "If it's something that I've actually put effort into cooking, I feel really annoyed with him [laughs]. It just makes you feel like they don't appreciate the effort that you've put in, even if it's something that was cooked. It's difficult, it takes so much time and half time he won't eat what I give him anyway, even if I chose it because he wanted it, if he liked it before, so you do think "why spend all that time and it to be wasted?" […] I get frustrated if it's something I've put effort into-- […] it's like, why do I bother." (P21)

Describing their negative affect in feeding, parents use words such as ‘demoralizing’ (P20), ‘annoyed’ (P18, P21) ‘stressed’ (P1, P5, P18, P20, P21), ‘frustrated’ (P2, P5, P7, P9, P12, P13, P18, P19, P20, P21), ‘angry’ (P7, P10, P13, P20), ‘fed up’ (P1), ‘cross’ (P5, P12) to describe the emotional environment and the dinner table:

> *“It's demoralizing if you cook something really nice and then they're like […] "I don't want this, it's disgusting." And Child2’s like, "I don't want it." She’s like, "Done, done, done” and pushes it away. I’m not expecting a "I love it. It's wonderful. Thank you." But to not eat it, god it makes you angry. You can see how parents give up trying. My husband loses his temper a little bit. I try and say, "Just don't get angry, it’s just not worth it", it can be hard though.” (P20)*

Parents have also discussed the challenges with a child not eating the food, and how the negative affect becomes too much at mealtimes and they have to take themselves away from the situation:

> *“I would get so cross and so frustrated with her, and I ended up smacking her hand, and then I'd feel so guilty about smacking her hand, and I'd be tired, my stress levels would be so high I'd have to take myself away, […] I had to go upstairs for a minute, either cry or scream. The frustration was so on another level I didn't know what to do, it would take me a good half an hour to calm down from being stressed and anxious, and worried, and annoyed that I smacked her or screamed at her..” (P5)*

With the affect in feeding at the mealtime suggested to affect the atmosphere, parents discussed how their own already underlying mood affected how much they were able to deal with:

“If I'm pissed off and I'm already in a mood and I go off on one, that's it. Literally, one whinge and they’re not having anything else, they’ll go without with me. Husband doesn’t help, he thinks he is by getting her a pot noodle or something, the whole environment is just sour by that point.” (P10)

Some parents reflected that their own emotions impacted on their feeding practices helping to ease meal-times:

> “No if I have had a rubbish day, I give them what I know that they will eat without any questions, we go back to basics, pasta cheese and tuna, and they probably won't even be offered vegetables. If I've had a bad day, I'm not making food if I think it may not get eaten.” (P17)

On the other hand, affect in feeding can also be a positive experience, with words such as ‘a pleasure’ (P5), ‘happy’ (P14), ‘lovely’ (P5, P17), ‘relaxed’ (P1, P7 P14, P17), ‘positive’ (P4, P8), ‘satisfying’ (P9), ‘calm’ (P4, P17), describing how they feel when feeding, or in the mealtime environment:

> “I get excited because he loves food and then it's a pleasure feeding him. I got really excited about mealtimes and I relished in the fact that he ate everything I prepared for him and I absolutely loved it. I enjoy dishing his food up because I know he's excited, he can't wait to see what he's got, he tends to say, "Thank you, this is lovely," he eats it all and it's not a stressful experience” (P6)

Another parent discussed the shift in affect, how at first it was a negative experience, and now upon the realisation and change in behaviour it is more of a positive experience for everyone:

> “It used to be really stressful, not a nice experience. Not nice at all. Now I’ve realised, I just let her lead the way now. It’s so much more relaxed now I’ve just decided to not focus on worrying about her. […] Now I'm just a lot more relaxed, it has made me relaxed and it's made dinner time more positive, more relaxed as well.” (P7)

5.3.3.1.2. Distraction and Technology

Parents discussed the challenges across mealtimes which have been combatted currently by the use of technology, such as television, tablets, phones and other devices. Parents discussed the use of technology at the table, not only to get a child to come to the table, but also to stay there:

> *“We tend to have the telly on, unfortunately. He’ll tend to zone out looking at the telly, so we do have to help him sometimes, otherwise it ends up going cold. I know it’s not good, we try and chat to them, sometimes we can. The plan is to try and wean off the telly but it helps just to get them, and keep them at the table, otherwise that’s the first challenge.” (P6)*

However, parents expressed that the technology also distracts children from eating:

> *“We’ll say, you can go on the iPad or doing something he'll be like, "Okay, I’ll come now." Sometimes if that’s the case then he will end up watching the iPad and we will prompt him, or help him to finish his dinner.” (P16)*

They highlighted how they end up having to help, prompt, or physically feed their child due to the distraction of the iPad or the Television. However without it the other option may be child wouldn't stay seated to eat dinner:

> *If she sits at the table and the telly is not on […] she'll say, "I've had enough, I'm finished." If I try and say, "No, Child2, you've had two mouthfuls. Come on, sit down, you're not finished yet, […] let's put on the telly". Yes, so then very quickly I put Ben and Holly on because I just know she's just not going to eat anything. (P5)*

Whilst some parents have used technology as a way to distract the child, enabling them to eat for themselves, others have discussed how they used the distraction of the tablet or television as instead a way to distract the child from trying to stop eating:

> *"He sits and watches his iPad. Because if he's just got to concentrate on his food, he can't sit and eat it. While he's eating, he's got to-- his mind's got to focus on something else. It's like he has to multitask all the times." (P13)*

With parents discussing the use of technology as a way to distract the child, and prompting them to eat more, it in turn reduces the child's ability to focus on the food and their own satiety levels. Some parents have discussed their own understanding that they do not want to use technology, and would prefer the child to have conversation, although it is not always possible:

> *"I need to really, I know I should say "No devices at the table," because sometimes it's like "You haven't even started your dinner yet." He is like, "Oh,*

yes." Then he starts eating but he's so concentrating on his game instead of his meal. I know, I should, be saying no games and stuff at the tables." (P19)

5.3.3.1.3. Battle of Wills

Over half (n=12) of the Parents regularly used the term 'Battle' or 'fight' (P1, P2, P3, P5, P9, P11, P13, P14, P17, P18, P20, P21) when discussing the mealtime and feeding experience with their preschool aged child. They discussed how they felt they had 'lost the will' (P21) when trying to feed their child properly, they had 'tried everything' (P9) to coax them to eat their dinner, they were 'out of options' (P15) in regard to new ideas to try and get the child to eat, and that it had become a 'battle of wills' (P2) with who was going to win regarding finishing dinner and eat the food the parent had made for them. Parents discussed how they would look forward to their partner arriving home so they could take over the reins in feeding, as it had become so draining:

"*It's a battle sometimes. I think it's actually good when Husband comes in sometimes because I will have battled for 10, 15 minutes, and he's only had two mouthfuls. […] I just hand over to him or we can all sit here and battle with him. (P2)*

Parents identified that when they were tired, exhausted and frustrated from trying to get their child to eat, they just wanted to be able to 'pick your battles' (P13,P17). The 'battle' element being not only getting them to 'sit at the table' (P9), but then deal with 'full refusal' in eating (P13,P18) and to stop them being distracted and leaving the table (P9) without eating the correct amount of food, knowing they'll be hungry or want a snack later on:

"The problem is, if they won't eat the vegetables, you can't stop cooking it. You can't stop offering it. You still cook it every day and throw it away. That's the hard

part, such a waste and you just think why do I bother, but one day you hold out hope they might actually eat it. One day they're won't be that battle between us and them--." (P20)

Alongside the battle of wills, many parents discuss the element of 'compromise' (P5, P9, P11, P20) or 'bargaining' (P6, P11, P14, P20, P21) with the child as a half way point in the 'fight' to get to the end of mealtime. In addition to the use of technology, parents explained how they used tactics such as 'eating half of the meal to get something else' (P20), or 'getting to choose dinner next time' (P14), or 'physically spoon feeding the child' (P6, P11) in addition to the use of treats, rewards and puddings (P5, P6, P21):

"I'll say "Dinner is ready, I'll heat it up and then you can have it". Sometimes I see I'm going to have some sort of a fight, a battle, and yes it can then affect meal times completely. So sometimes we have to compromise, well we don't have to, but we do. "Okay, well just eat half of it then you can have something else." If I give up I'll get them something else, like some really quick sausages." (P20)

5.3.3.2. Theme 2: Food for Non-Nutritive Purposes

Parents extensively discussed the use of feeding practices, using reward or treat based foods as a non-nutritive element, during and away from the mealtime environment. The theme is separated into four subthemes, with Parents discussing they have used food with their children as a way to; reward a certain behaviour, control an element of behaviour, modify an existing behaviour, or regulate the child's emotions.

5.3.3.2.1. Use of Food as a Reward

Parents discussed the UFAR as a way to incentivise food consumption both within and outside of the mealtime environment. Firstly, parents discussed using treats, especially pudding, as an incentive for the child finishing their meal. Elements of compromise are seen once again with the child being rewarded pudding for a number of mouthfuls:

> *Like I Just say "have a little bit more, a little bit more. Don't have to eat it all, maybe section it out, but have a little bit more, 5 more mouthfuls". Then we'd always say, "okay maybe one more, and then you can have a sit down in the other room with some pudding, let's do that?". (P19).*

As well and using food to finish a mealtime, parents also discussed the combination of using as food as a reward with such feeding practices as 'prompt to eat' to reduce 'slowness in eating' in children. Parents are shown to prompt and remind the child that pudding is waiting for them to finish dinner:

> *"Well if they've left all their veg then I'll say to Child1, "Four mouthfuls and then we'll get your pudding". […] Some days I'll say, "Today you can have some ice cream for pudding" so then it becomes a treat. […] Only if he is being slow or tired I'll maybe say "the quicker you finish your dinner, the quicker you can have pudding", almost reminds him what's coming. He'll get on and eat it then." (P6)*

Parents discussed how their variation in feeding practices between siblings resulted from children's different responses to these practices. For example, they discussed how one sibling, who doesn't need 'food as a reward', acts as a motivator to the other child and the parent's use of a reward despite this:

“Yes, oh yes bribery and corruption. We're professionals of that in our house. […] I'd say, "Come on, please try it, it's really fine, I promise". Then you try the bribery and said, "Look, if you try it, you can have a sweet. If you try it, we can put your favourite cartoon on”. “Look, Child2 is eating theirs fine, they’ll get a sweet”, even though they were eating it anyway, and didn’t need to be given anything for it [laughs].” (P6)

Many parents have discussed how bribery and UFAR works differently with the siblings. With one eating dinner on the promise of food as a reward, however with the other not having the same affect:

“I'll say, "Try that, and you can have an extra special something after, or you can have an extra biscuit," or, "Don't tell your brother, but I'll give you extra sweets." It worked with Child2, but no, Child1, he's just not bothered, not interested.” (P13)

When bribery and UFAR does not succeed in successfully getting the child to consume their dinner, parents discussed how they would regress and spoon feed their child, even if the child is not asking for food:

“What we've been doing is end up feeding her ourselves. I know it's not a good thing to do, but it's the only way she'll eat and then we'll have to bribe her a lot. We say to her, "if you have this, then you get that," a lot of her eating is after she's been bribed basically. She very rarely asks for food herself.” (P7)

5.3.3.2.2. Use of Food to Control

Use of food and feeding practices are discussed by a number of parents as a way to take charge or control the mealtime environment, using controlling feeding practices to keep track of the food consumption. As mentioned previously, the behaviour of spoon feeding the child, when they are capable of feeding themselves is also discussed by parents as a way to control the situation, especially within the mealtime setting. Spoon feeding may get the child to eat more than they would have themselves, and may affect the child's own satiety levels:

> *"If Child1's decided he doesn't want to eat his dinner, […] you could say, "Okay, darling, that's fine, so tell me what did you at big school today?" and you be really enthusiastic. […] and then you just start spooning the dinner in, and they just eat it because the spoon comes to the mouth, they open the mouth and they eat it. Then after you've discussed whatever topic you were discussing they've forgotten that they said they didn't really want it." (P5)*

As well as the parent taking control of the situation by spoon feeding the child, parents also discuss an element of two-way relationship of feeding control; with the children taking control of the situation by being spoon fed, themselves taking charge of the mealtime family environment.

> *"When he won't come back to the table after we've coaxed him, the only way is to have him on your knee, and you have to spoon feed him […] by that point he won't go back to sit in his own place, he's got your attention, even if he's feeding himself from his own plate, he will still only stay on your knee at that point." (P21)*

Parents also expressed their negative emotional reactions to physically spoon feeding their children, as well as the child's:

> *"One time I even tried to force the spoon in her mouth because it had gotten so bad […] and I was like-- You go into panic mode, […] you think, "Well if they have one taste of it, they might think, 'Actually I do like it'". […] and she looked at me frightened because I was trying to force a spoon in her mouth, and I could see her looking at me frightened, and then I thought, "Oh my God, what am I doing to my child?", and it was just so awful." (P5)*

The use of PTE is also described by parents within the mealtime environment, whether it be through physically spoon-feeding or continual verbal prompts including not leaving the table until the food is eaten, the child is pressured to consume more foods although they claim satiety:

> *"It very much depends what kind of mood she is in, […] I used to get really angry and I used to force feed her. I know that wasn't good, but she […] was really annoying me and I was literally opening her mouth and I was like, "You're having this pasta," and she was crying. I kept thinking-- I was about to break." (P7)*

PTE is also described by parents regarding the mealtime, whether it be physically feeding or not, the child is still told to eat more even though they say they are full or no longer want any more food:

> *"She starts doing a puking motion, she does like, "Ough", if it's a food that she doesn't like or I'm feeding her and she doesn't want to eat. So I then have to raise*

my voice and I tell her "don't you dare do that" because I know that she hasn't eaten, I'm giving the food and she's doing this." (P10)

In addition to controlling feeding practices such as pressure or prompting to eat, parents use elements of control by restricting unhealthy foods. Restricting foods has been suggested to make those foods, such as high sugary treats more desirable to the child. Parents have discussed how they have had to hide them from the children:

"She'll try to find the treats and snacks a lot in the house, so I'll try and keep snacks out of her reach, but she's recently started climbing up the cupboards, and then she'll find things, so I've had to hide things in the other cupboards now, so she doesn't know where it is." (P7)

5.3.3.2.3. Use of Food to Modify Behaviour

Using food as a reward is also a way to change or adapt a behaviour, especially to reward good behaviour. Consequently, the child may always expect a reward for good behaviour, within or outside of the mealtime environment:

"We say "You can have a pack of buttons if you help me with the housework" or something like that. […] If you just say, "Well done, thank you. I'm so proud of you" they still expect something […]. I should actually expect them to just do it. I'm trying to reduce that. He likes a reward for being good." (P20)

In a similar way that parents have discussed giving food to modify or create a positive behaviour, parents have also discussed how they have also used the threat or actual removal of food as a way to modify or reprimand a negative behaviour by the child. With

this they have discussed how threatening or actually removing a treat or a reward from a child has worked to change a behaviour:

> *“I've certainly used that as a threat. If he said, "I don't want to eat that." I'll certainly say, "Well, fine. You don't have to eat it but you won't get any pudding, and certainly nothing out of your Flamingo box", and I make a point of saying that […] the Flamingo box is where his treats are kept. If you say that, then he does sometimes rethink it.” (P6)*

As well as the threat of removal of a high reward item, parents have discussed the removal of a future reward. Therefore, the child technically never received the reward but instead understands, due to their behaviour, they now will not. One parent explained to the child how their behaviour not only affects the treat they would have had, but how their behaviour has then inadvertently punished the rest of the family, to teach the child the consequences of their actions:

> *“I will say, " you're not having an ice-cream." But none of us will have the ice-cream. […] So thanks to him, now no one has it.” (P3)*

In a similar notion to this, other parents have discussed the similar removal of a proposed treat, but then highlight their inability to follow through with the action due to the emotional aftermath:

> *“If she’s been naughty or playing up, and if she wanted a lolly or something. I would say "Well you're not allowed to have it now." Then she would just start having a tantrum. I couldn’t deal with that, so she would end up having it.” (P7)*

The parent discussed how she knew the action of ‘giving in’ was wrong but the mood that followed would have been more difficult to contend with. She then discusses the child’s understanding in their behaviour, and the change in that behaviour once they have been given the treat. The challenge faced by these parents is the threat of removing an item due to a bad behaviour, and then following through with the action, when an emotional breakdown or tantrum may follow:

> *“If she’s been naughty or playing up, and if she wanted a lolly or something. I would say "Well you're not allowed to have it now." Then she would just start having a tantrum. I couldn’t deal with that, so she would end up having it.” (P7)*

5.3.3.2.4. Use of Food to Regulate Emotion

Parents expressed their use of food to calm, soothe, or regulate their children’s emotion:

> *“Yes, it definitely helps him calm down. I think sometimes when kids start wailing and crying and really sobbing, they struggle to snap out of it. The best way to stop the noise is put something in their mouth. That really is the best way. You can give them a colouring book, […] their favourite programme, but you've still got the [sobs] and they really struggle to get out of it and until that stops. […] If you do give them something to chew or suck on, it obviously stops the noise because they're now chewing and just having 30 seconds of not crying, they've forgotten then that they were crying.” (P5).*

Upon reflection, parents are conscious of their use of food to regulate their children’s emotion but feel hopeless in changing this behaviour:

“Giving Child1 treats is out of desperation by that point to make that sound [tantrum] go away. Child2 is stressed, I’m stressed, everyone and whether he’s too young or he knows it or not. He’s got his way. I almost feel like sometimes wanted to give Child2 the treat to show him that only good children get treats, but you don’t turn off an alarm that’s not going off do you. The problem is, even if I was to do that, that’s rewarding him for-- he wants it more. [sighs]” (P21)

Many parents when they talk about the use of food to regulate an emotion or to diffuse a heightened situation, they also refer back to the similarities between their own relationship with food and emotion - almost as a way to normalise the behaviour:

“*If she's upset she won't touch her food. If she’s just sad and we offer her a cake then her face will light up and she will suddenly just forget that she was sad. As for food, upset, yeah she’ll go away from food. I'm exactly the same as well. If I'm upset I'm not a comfort eater. I will not eat anything. She's exactly the same. She’ll carry on the sobbing sound. Then she will, she might say no at first, maybe in case there’s a better option, but then if you just leave it there, then you'll see she will suddenly calm down, wipe her tears away and eat it.” (P7)*

Using food to modify behaviour has also been discussed in regard to the differing use of these practices dependent on the child or sibling. Parents have discussed the use of food for emotional regulation, in such idea that what works with one child will not necessarily work with the other:

“It depends on which one’s having a moment. I could say to Child1, do you want a biscuit but no he'd be all right, I just leave him to it, he'll bring himself out of it. Child2 though, he used to cry for much, much longer, so I’d have used food with him.” (P13)

5.3.3.3. Theme 3: The Mirror of Emotional Eating

The theme the ‘Mirror of Emotional Eating’ reflects the relationship of EE between the parent, child and across the family unit. The theme focuses on parents hidden emotional or comfort eating, the similarities between parent and child regarding emotions and food, the pathway to the development of EE and the challenges of EOE and EUE in or away from the mealtime environment.

5.3.3.3.1. Emotional Eating Behaviours

As discussed across the theme, EE behaviours are seen in both parents and children, whereby emotions of happiness or sadness are linked to a change in eating behaviour, EOE or EUE behaviours. Firstly, focusing on the parents own EE behaviours, one parent discusses her own understanding of her EE behaviours:

> *“Mine is terrible, I've always had an emotional relationship with food. Always gone to the bad things which I know has an adverse effect on my mood and doesn't help in the cycle of life, obviously. If I'm having a bad day, if I'm bored, if I'm happy and I've done something that I think is amazing, I've got to reward that. Basically all of my rewards in whatever emotion is bad food. I don't know, but I know that then I’m an emotional eater, yeah.” (P15)*

In comparison, one parent discusses her how her emotions play out in regard to food consumption, or the inability to consume food, known as EUE:

“I really don't like feeling full which I think is helpful… definitely stops me overeating and I'm quite sensitive to my own satiety. […] If I'm feeling quite upset or stressed or anything like that, I’m less likely to eat if I'm anxious, […] if I’m feeling really upset or really anxious and then I'm less likely to eat at all. It'll just be that feeling in your tummy would not allow me to eat anything.” (P1)

One parent discusses her development of EE and how she started to notice her need for sugary foods, as she was left on her own:

“*I definitely class myself as an emotional eater. I think there's always been an element of it since childhood […] For instance, when my parents first started leaving me in the house on my own, […] as soon as they left the house I was in the cupboard with a teaspoon in the brown sugar. Literally spoonfuls of sugar. I would never do it when they were in the house. It was I'm on my own now, I can do something that I shouldn't be doing.” (P21)*

Parents then focus on the idea of their children’s EE behaviours:

“He'll ask for the biscuits or chocolate if he's happy, […] if he's particularly happy he does ask for biscuits, but if he's bored he'll ask for biscuits, so those two different ends of the scale I suppose.” (P15)

“I don’t know, I suppose it depends on his day. He does like biscuits […] if he's having a bad day, he'll ask for chocolate or cookies, yes. That definitely cheers him up, definitely, yes. I'm the same though [laughs].” (P19)

The parental understanding of EE and the development of these behaviours on the children is discussed. The issue for this parent revolves around the need for alternative ways to solve emotional meltdown, other than food:

> *“it's an unhealthy behaviour to solve your emotions with food. I know that because that's how I live my life and it doesn't work. […] "I don't want to just feed him every time he's upset because that's not good." He's going to just turn out like me. He's going to be an emotional eater.” (P21).*

5.3.3.3.2. The Hidden Emotional Eating

Focusing in more depth on the parents understanding of their own behaviours, they discuss ‘hiding’ their emotional or comfort eating from the children, as a way to not teach them the behaviours that they partake in. Parents have discussed hiding their eating behaviour from their children, instead with their head ‘in the fridge’ (P3), ‘in the cupboard’ (P14, P15, P21), ‘in the car’ (P5, P17), ‘once they’ve gone to sleep’ (P5, P6, P16, P18). This suggests their acknowledgement of the inappropriateness of these eating behaviours in relation to modelling. One parent also finds a benefits in eating the child’s sweets:

One parents discussed the issues with the children’s treat box, and her hidden eating:

> “*When things are really stressful, I'm literally standing in the pantry eating. I try to do it without them seeing me because I don't want then to just eat treats and sweets, but that's what I need to get through the day-- [laughs]. Somehow I think, “if I eat some of their treats then that's less for them, maybe I’m […] doing them a favour somehow. [laughs].” (P21)*

One parent discussed the understanding that they felt on occasions judged, not only as a parent, but also as a women and the feeling of guilty eating:

> *“No, I'm a really guilty eater. I would eat in the car or I'd eat when they would have their nap. That's my thing. If I'm exhausted and want to eat really naughty food, I would either eat it in the car or I'd put Child2 down for her sleep and […] eat. I don't do it in front of people. I think as a woman you have that embarrassing guilt thing of like […] "everyone can see me eating a Mars bar and it's really bad." I'm like a secret eater. I do it in private. I'll wait for Husband to go to bed so I can eat the cookies in the cupboard.” (P5)*

5.3.3.3.3. Parent Child Similarities

Throughout the discourse, parents discussed similarities between themselves and their children, such as an emotional relationship within a food based context. This subtheme is split into parents discussing the similarities regarding EOE or EUE behaviours. Firstly, regarding EOE behaviours, one parent retrospectively discusses her memories of eating when she was a child, highlighting the issue of intergenerational EE behaviours:

> *“It's my mom that I get if from. She, very much when I was younger, would be like, "let’s go to the shop. Look, […] we'll have some chocolate, those crisps are nice." […] There are certain foods that I associate with having a meltdown. They are what my mum used to go to, so they are what I go to on a bad day. […] Like Galaxy Chocolate. I don't like it all. I think it's really sweet. But it's a bad day food and I will eat a bar of it. Not just a bar, a family size bar. Just going down, I'm not even chewing it. It's just gone.” (P3)*

In the same instance, parents have then begun to realise the similarities between themselves and their child in regard to how their emotions affect their food choices, and the unhealthy choices they make:

> *"I'm trying desperately not to put how I see food on to her. Mummy doesn't lead by example. If I'm having an emotional day, or if she is, I'll still try and get her to eat healthy because I know that that's my downfall. […] If she's happy she wants food. If she's bored she wants food. I am aware that her emotions affects her food and mine used to. They still do." (P11)*

Alternatively to overeating behaviours, parents have also discussed the element of emotional undereating (EUE) and the traits children may have developed from that:

> *"If I'm feeling quite upset or stressed or anything like that, I'm less likely to eat if I'm anxious, I'm not somebody who would eat according to moods. She's a bit like me I think. If she's anxious she wouldn't be very likely to eat. If she was upset she definitely wouldn't eat. She'd kind of want settle time first to feel better about herself." (P1)*

Similarly, this parent discussed their child similarities to them in an EUE context

> "*If she's upset she won't touch her food, […] she will go away from food. I'm exactly the same as well. If I'm upset I'm not a comfort eater. I will not eat anything. She's exactly the same." (P7)*

5.3.3.3.4. Pathway of Emotion to Food

Many parents have discussed the challenges they face with the link between emotion to food in all aspects, be it their own EE behaviour or their children's. Parents have discussed how their own emotions play a part in how they then choose to feed themselves and subsequently their children:

> *"You just want something quick and easy, […] you want food that makes them happy, makes you feel better because it does. I must have an intrinsic link with fast food where it's like a treat. Perhaps I'm causing it in my own children I guess. I don't know, maybe they don't realise it, but makes me feel better". (P20)*

Parents have discussed the realisation of their own behaviours and almost the 'planned' EE evening due to their current inability to regulate their emotions:

> *"I mean, today I'm dreading […] I know that today is just going to slip like tonight is going to be a binge night. I can see it coming. […] I just know today is just going to spiral." (P3)*

Parents also discuss their use of food to control or mediate their expected emotions from their preschool child:

> *"When he had his preschool jabs, he seemed quite nervous, so I gave him his first hard lolly. He had never had one before. He was so overwhelmed that he'd been given a lolly which he'd seen other kids have and he'd never been allowed one, he didn't even notice he'd had the injection in his arm. That worked well. He used to be frightened of the barber's. He's not frightened anymore but I used to have to go to the sweet shop first, get him a pack of sweets […] otherwise, he would have gone mental." (P5)*

This link between emotion and the food has been shown across a number of parents, with parents discussing their child's development in understanding this pathway. One parent discussed how their child has since learned the link between their emotion and food, now asking for it ahead of time:

> *"Yes, if he hurts himself, we used to be, "Sweetheart, come here. Would you like ice cream? Would you like a biscuit?" but then, they're so transparent, he bangs himself on purpose. Says, "Mommy, I'm hurt. I think I need an ice cream." He said, "This is really bad. It must need an ice cream to make it better." He's made it really clear, so we've realized what we're doing." (P20)*

5.3.3.4. Theme 4: Who's in Charge

The theme 'Who's in Charge' discusses the involvement from others within the feeding and mealtime context. This is discussed regarding the element of family involvement, the significant 'other parent' in the family household. In addition, parents discuss the element of control regarding the child themselves and the parent 'losing the element of control' (P21).

5.3.3.4.1. The Other parent

When focusing on the element of control, the 'other parent' in the household is discussed in two contexts, either as being a benefit or a hinderance to the feeding environment. One parent discusses their husband is a welcome relief and helps to diffuse the situation:

“I'd have to take myself away so when Husband would come in from work, I'd say, "You go in the kitchen with them, I can't even look at her". I had to take myself away, I had to go upstairs for a minute, and either cry or scream.” (P5)

On the other hand, some parents discuss how the ‘other parent’ can be a hinderance to the mealtime environment, as their own meal and food issues are presented and thus a challenge to provide good role modelling:

“She’s become more fussy. Her Dad isn't a great cook. He struggles to cook for her. She eats a lot of what I would class as junk food with him. I think that doesn't help her relationship with food because he doesn't have a great relationship with food because he can't cook. He doesn't eat vegetables, he doesn’t try.” (P11)

An interesting concept of the ‘other parent’ is not necessarily the adult figure, but the sibling who also tries to ‘parent’ the preschool child in the mealtime environment, and their use of feeding practices. Whether this be something they have seen and learnt themselves, or something they do naturally, the parent discusses the challenges in the siblings trying to take over the parent role:

“*I've found difficult the fact that his sister will then get involved. Then she'll pipe up and say, "If you eat five mouthfuls, mommy will give you a lollipop." I'm like, "That was not helpful. Just keep your mouth closed. This is not your business." (P21)*

In context of rewards, parents have also described how siblings use parenting techniques for their own personal gain. One parent discusses how all of the children have to finish their dinner to get a bouncy ball in a jar, with a £10 reward when the jar is full:

“They'll be like "Come on Child1 we want our balls. We want our £10." Definitely with eating, the boys can get, well, they’re are like, "Come on Child1, just eat it." Probably shout at her, but encourage her in some way.” (P1)

5.3.3.4.2. Family Involvement

Having previously discussed the use of the other parent and siblings, family involvement was discussed by almost every parent regarding the element of control over behavioural management, especially regarding feeding their own child. Parents have discussed how family members get involved with how ‘they would’ deal with certain emotional situations:

“When I'm around my sisters, when he's upset, they'll say, "We'll give him a little bit of chocolate and he will calm down”. He does calm down, he would have calmed down anyway. Yes, and I’m there just trying to say, "Don't just get the chocolate when he's upset." But you can’t tell them as that’s what they do.” (P16)

Parents discusses the challenge of ‘who’s in charge’ at other family members’ homes. They discuss how certain house rules regarding feeding in their own home are not adhered to in others’ houses. The practices used with their own children are not followed which creates an element of family tension:

“She [auntie] just feeds them from the moment they get there. […] From the moment they get there, she's just feeding them. "Have bread and butter with that, have this, have that. Do you want some more sweets?" They don’t need it. She judges me, as if Child1 was going to starve because I won't let her have another biscuit.” (P14)

Regarding the family involvement, parents discuss how ‘grandparents’ they have their own set of rules that seem to almost overarch their own. They discuss how they, as parents, seemingly lose the element of control to their own parents, as it is important to have one set of rules in the house:

> *“Granny will always give them pudding. They love going to granny's house. They do associate granny's house with eating junk. At granny's house though, it's granny's rules. I don't step into granny's rules at all. She takes control of the eating there. Because I think one thing that is really bad is that you've got two people trying to do food. Granny's house, granny's rules.” (P17)*

5.3.3.4.3. Child in Charge

Lastly, within the ‘element of control’ is the idea that the child themselves are in charge of the situation and the eating environment. Some parents discuss how they give the child illusion they are in control or ‘get to make a choice’, to give them an element of ownership over the decision:

> “We give them an element of choice. Like lunch, I know what I'm going to give them, but I'll give them the confusion like they're choosing it. […] I'll say, "Should we have this or that?", the ‘that’ being something they don’t like, and she'll say "this!" You're giving them the illusion that they're choosing it then.” (P6)

In contrast to the illusion they are in control, some parents have discussed how the child is in control of the situation. This is mostly combined with the ‘path of least resistance’ and the ‘battle of wills’ between the parent and child for an easy life:

“More often than not it is Child1 that dictates what we have. As in if I give them a choice, Child2 doesn't really get a say. It's whatever Child1 decides. […] Sometimes I will say, "Well, you can have this or this. You tell me." *But it's usually Child1 that decides because he's the fussiest. You have to please him. […] I'll be like, fine, let’s have what he wants." […] we all know that if he doesn't get his own way, it's […] just not worth it” (P21)*

5.3.3.5. Theme 5: Realisation of Behaviours

The theme ‘Realisation of Behaviours’ illuminates parents understanding of both their own behaviours as well as their child’s. The theme is separated into five separate subthemes, focusing on: the parents recognition of food for self-reward, the parents guilt towards the non-perfect parent ideology, the understanding that actions are taken for an easier life, normalising parenting behaviours with others, and parents and child’s realisation of behaviours. Parents discuss how their strategies may not be best practice, but normalise the reasons for these. Parents rationalise behaviours with such ideas as ‘appeasing your guilt’ (P5), ‘a need for an easy life’ (P13), and ‘needing time away (P3, P5). The parents acknowledged it may not teach the best values to their child and discuss the gap between their behaviour and the perceived ‘perfect parenting’ (P6).

5.3.3.5.1. Recognition of Self-Reward

Firstly, focusing on the parents understanding of their own behaviours, they discussed the realisation of the need to ‘reward their own behaviours’ and treat themselves. This is normally via use of food as a self-reward for a good parenting behaviour:

“I know that I do it with myself. I reward myself for a good day or a bad day, or whatever kind of-- "Oh, I've had a bad day, so I can eat that." […] If something's gone really well, then I'm not going to cook, ill want to go out for a meal, a treat, something. I’ll be like, "We'll have takeaway tonight and we'll do this and we'll do that." […] I do think I use a lot of food, sad or happy.” (P14)

Parents also discussed how they also make plans to reward themselves with food:

“In the hospital bag, I put a great big packet of Chocolate Hobnobs because I was like, "I've been so good that I'm going to have these when I get back to the ward with my new baby." […] I opened those biscuits and then basically didn't stop eating [laughs]." (P21)

They discussed the idea of a foods as a ‘treat status’ for them, with the understanding that the behaviour is something that is not necessarily the best thing to teach their children.

“I don't want him to associate naughty food with a reward. Because I do that as a grown-up, like it’s the treat status in my brain [laughs]. Like if you’ve had a hard day at work or whatever, and you think, "I'm going to stuff my face with an enormous pizza and chocolate and wine." I do. Like, It's delicious at the time, and then I regret it instantly. I'm like, "I've put on another stone." (P6)

One parent explains how her child is also drawn into this treat-regret cycle whereupon she shares treats with her children:

"*They'll choose maybe a chip shop or a fun tea. […] We'll all just sit there together and eat our fish and chips and we all just feel so much better for it. Well, at the time, until five minutes afterwards, then I'm uncomfortably full. Then the guilt, the whole reason for the treat dinner is then replaced by the guilt of eating the treat dinner, well for me anyway, I'm sure he's none the wiser. But that's the wonderful realisation of adulthood." (P6)*

5.3.3.5.2. Perfect Parenting Guilt

The subtheme of 'Perfect Parenting Guilt' is discussed regarding parents' feelings that their parenting does not match to the perfect parenting ideologies proposed by society. One parent discusses how whilst on holiday, the need for the time off the stress of parenting outweighed the continual need for the child to be provided with healthy food alternatives, knowingly giving the children non-nutritious food as a way to pacify or entertain them:

"I remember we were all on holiday, and I thought oh sod it. I don't want the battles for a week. I want to enjoy my time to and not have the stress over what they're 'meant to have' over what they want. My god though, the perfect parenting guilt, especially when your friends eyeing up what they're eating, […] telling you what you should be doing. It all just gets too much, too much, they can have what they like. I need a holiday to, if they want to sit there a bag of crisps and an ice cream, at least they're eating something." (P20)

This extract also suggests that other the perceptions of other parents' views impact on this guilt. This idea is discussed across other themes (see 5.4.2.3 and section 5.3.3.4.2), with people advising how another should parent. Parental guilt is also discussed in the

wider context of how one should ‘perfect parent’ and the parenting guilt not reaching that level, using treats and rewards as a way of making themselves feel better for the actions they are taking:

> *“Also I think a lot of it is parenting guilt. […] it really does impact on what you feed your children, what toys you buy them, […] a late night when they shouldn’t, […] things that aren't beneficial to your kids because you've got this parenting guilt. […] you allow your children to watch a movie past their bedtime and eat sweets and popcorn. One, because it gives you some quiet time and it makes them happy and it makes you feel less guilty. A lot of the bad things parents do things with their children that don't benefit their children is parenting guilt, definitely. That's a horrible thing, but everyone gets it.” (P5)*

5.3.3.5.3. Path of Least Resistance

As discussed in section 5.3.3.5.2, parents discussed the strategies they use not be perceived to be in the best interest for the child. The subtheme of the ‘path of least resistance’ lies between the parent and child’s ‘battle of wills’ (section 5.3.3.1.3) and the idea that parents sometimes choose the easiest option in the given circumstance to appease or calm the behaviours, and get to the end result of outcome as quickly as possible. This relates very much to the element of control between parent and child (section 5.3.3.4.3), although warrants its own subtheme due to the parents realisation and execution of their behaviours. They have discussed how they have chosen the ‘path of least resistance’ when looking for a solution to a child’s behavioural situation. One parent discusses how she used removal of a treat for bad behaviour, however due to this the behaviour got worse and she ended up given them the treat as it was easier:

“It happened the other day, he wasn't listening to me on the way home from school and I said, "I was going to take you to the shop for chocolate but I won’t now”. […] I stuck to it and I got home and he went, "I wanted a treat” […] then it’s the mood, the anger that he didn’t get a treat. […] then you just give in, it’s just easier. I’m sure they know you do eventually. Even if you’ve said no for half an hour, you just want an easy life, so yes you give in. He gets the sweets that I’d said he couldn’t have”. (P13)

The path of least resistance was also discussed in combination with use of food to regulate emotion (section 5.3.3.2.4), with one parent discussing the attempts to calm the child after an emotional episode:

“if we've had a stressful afternoon because Child1 is quite an emotional boy and he does have these blow-ups, and cries a lot about all things. I'll be seeking comfort from food, and I know that giving him a little treat would help to calm him down. I will often say "Just go and watch the television, I'll bring you something." Then we'll all sit down with a bowl of treats and finally have a little bit of-- calm, I think it’s called the path of least resistance sort of thing, isn't it? Everybody like "Now everyone's calm, now life can continue." (P21)

5.3.3.5.4. Normalising Behaviours

Many parents, whilst discussing the realisation and understanding of their own behaviours, continued on with a discussion regarding the ‘the normality’ of those behaviours in society. Parents used the terms such as ‘everybody gets it’ (P5) and ‘we all do it’ (P14) and ‘it’s not just me’ (P21) when discussing the parenting issues and

behaviours that they face. One parent in particular, whilst focusing on the element of ease of feeding discusses how good intentions are normally attenuated to get the child fed:

> *"I think most parents start off with good intentions, and then life kind of just gets busy, and in the way, and you do anything just to get them fed and happy. […] As much as I know some of the stuff that I do isn't the best, it's really hard, I'm sure we all do it." (P14)*

The normalisation of behaviours is not exclusively on how they behave with their children, but also how their own actions are normal, and almost benefitting their children in some way. One parent tried to normalise the behaviour of her hidden EE behaviours (section 5.3.3.3.2) by normalising the consumption of the rest of the packet of biscuits she bought for her children's school run:

> *"If I was to have bought them a pack of biscuits in the car […] They may have one or two and I then may end up having the rest depending on how my day has gone, but that's okay as I'm bigger than them [laughs]. "Mommy has had a busy day, so mommy deserves more biscuits" (P17)*

5.3.3.5.5. Understanding of feeding practices

An interesting subtheme of 'Realisation of Behaviours' is the understanding that the parents feeding practice is creating a behaviour in the child. One parent discussed how they understand their feeding practices may not be the correct course of action, but in the current circumstances it's the only way to get the child to eat their dinner:

“Yes, well that's another thing that constantly, wondering whether you're doing the right thing as a parent. So, this whole, "You can't have pudding unless you've eaten your dinner." Then when you think about it, am I over-feeding them? I'm forcing them to finish a plate of food that they might not have space for, because they're motivated by something sweet afterwards, but then, what do you do?” (P21)

This subtheme is not limited to just the understanding of the parent, but also the child’s. Parents have discussed how children have begun to understand which behaviours are needed to gain rewards and treats. One parent discussed her child’s behaviour within the mealtime environment:

“she might deliberately misbehave in order to get praise, or even a treat afterwards when she does behave. Because obviously, being normal at the table, you wouldn't get any praise, would you? But then if you're not good-- and then you become good, then the praise will come. I don't know whether that might be what she's doing. I don't know. She’s a clever one though I wouldn’t put it past her.” (P18)

This is echoed by a parent outside of the mealtime environment, by a child beginning to understand the use of a reward for emotional regulation purposes. They discussed how the child is clearly ‘transparent’ in their understanding that being upset would normally receive a treat:

“Yes, if he hurts himself, we used to be, "Sweetheart, come here. Would you like ice cream? Would you like a biscuit?" but then, they're so transparent, he bangs himself on purpose. Says, "Mommy, I'm hurt. I think I need an ice cream." He said, "This is really bad. It must need an ice cream to make it better." He's made

it really clear, so we've realized what we're doing. […] Actually, I've learned that's not a good thing to do at all because what you're teaching them is, "When I'm down, I comfort basically. I know, because that's what I do." (P20)

This suggests as the parent is not only realising how her parenting behaviour may be teaching the child certain tactics regarding use of food for emotion regulation (section 5.4.2.3.3), but also the understanding of the similarity between parent and child ER:

"*He's going to just turn out like me. He's going to be an emotional eater. When you've had a bad day, you're struggling to not go straight to the cupboard, he's screaming at the top of his voice, and you're conscious that the neighbours are going to be annoyed with you. […] You just say, I know I could just solve it an easy way. It's a constant battle. It's 50/50 really. Sometimes I do just say, "Do you want some crisps?" He's like, "Okay. Let's do that then." You just sit there eating crisps feeling like a failure. This is the only way I can control my children is by giving them treats (P21)".*

By understanding the development of the use of food for emotion regulation, the parent normalises the behaviour (section 5.4.2.5.4) by discussing that's what they would have done in that situation.

5.3.3.6. Theme 6: The Catalyst of Emotion

The theme 'catalyst of emotion' is one of the most prevalent themes within the data. The majority of discussion by the parents linked back to emotions, feelings, and the need to try and do the best by their preschool child whilst managing their own ability to regulate emotion. They discussed the need to regulate their own emotions, whilst managing the child's own temperament and the challenges that they faced alongside the mealtime

environment. Lastly, they discussed the individual differences between siblings, and the how parental practices change dependent on the regulation of their own emotions or the temperament of the child. This links to previous subthemes regarding using foods to modify behaviour dependent on the outcome behaviour of the sibling (section 5.3.3.2.3). This theme however differs by exclusively focusing on the element of emotion regulation and its impact on the feeding and eating behaviours.

5.3.3.6.1. Parents Emotion Regulation

Parents own ability, or inability, to regulate their own emotions has been shown as a challenge when having to deal with a difficult situation with their preschool aged child:

> *“Probably, very stressed. I wake up stressed, anticipating the stress is going to come but then, like I said, if I have a good day, the stress is gone and I'm quite happy to sit and not pick, but it's when things go wrong.” (P3)*

The ability for parents to regulate their own emotion has been discussed previously (section 5.4.2.2.4), as they understand their emotions play a part in the family environment, especially within the feeding environment:

> *“I suppose if I've always had a bad day, if I'm a little bit fractious, that can impact on it on and I know that it impacts on everybody in the household. So thinking about mealtimes, might just be a little bit more blunt with him. Just like, "Oh just get on with it," I know it impacts on him. And he gets a bit more like whiny then I end up just feeding him anyway, then there’s the whole stress of that. Ergh.” (P15)*

This is an interesting concept as the parent has discussed the challenges in regard to her own emotions. The ‘whole stress of that’ refers to the negative affect in feeding, with the ‘fractious’ link between emotions the parents expressed due to their challenge regulating their own emotion and the feeding environment. Parents have discussed the differences between their and their child’s ER with how these are dealt with:

> *“It'd take me half an hour to calm down, once the moment is over for her it was over, and that's it. Her mood for the rest of the evening was completely normal.” (P5)*

5.3.3.6.2. Child Temperament

Child temperament is also therefore important to discuss alongside the ability to regulate emotions as the child’s own character and temperament has an ability to affect not only the parents ability to control or regulate their own emotion, but also the differences in the mealtime environment:

> *“They definitely do have an impact. I think you can generalize it to how the kids are behaving, acting throughout the day, if my expectations aren't met, then I'm very shouty, everybody gets very upset, and then I'm like, "Just get through it and get to bedtime” (P9)*

Parents discussed the challenges that come from the child’s temperament within the mealtime:

> *“If Child2 is in one of her moods, she can end up throwing a right strop, throwing the plate around, which is hard because you end up losing your temper and it's hard not to have to really scream at them. Obviously, that then makes it worse.*

It's normally a case of calming her down, […] then she'll get back into it, maybe then she'll, maybe eat." (P6)

The child's temperament has been shown to be a large factor within not only the mealtime environment, but the way the family deals with emotions throughout the day. This parent discussed the link between their child's temperament and their inability to regulate their emotion without food based rewards:

"When he's very tired or if he's upset about something. If he's had a spat with his sister. He's quite emotional, so when something doesn't go his way, it's all out crying, screaming. Once he's in that state, you can't get him out of it. If you offered him something, if you offered him a treat, often will resolve that situation" (P21)

This extract also highlights the link between the child's temperament and how the parent deals with the situation and their affect in feeding and echoed by numerous parents. Dealing with the child temperament has also been discussed outside of the mealtime environment, and the subsequent response this has on the parents own emotion regulation:

"It's really hard and he gets so angry, really angry about things. He's still really shouting and like screaming in your face. There's been times when he's been in timeout where he's emptied the whole cloak cupboard, thrown the shoes down the hallway. He just goes into a rage and he can't-- it's just so stressful, you feel yourself shaking." (P21)

5.3.3.6.3. The Differing Sibling

The difference in siblings has been well established across the themes, including the differences in the child's character, their eating behaviours, and how parents deal differently with situations dependent on the child's individual characteristics. Many parents discuss the idea of "parenting the children" in exactly the same way yet having completely different results:

> "*I set off weaning them in exactly the same way so they would have been the same results. I had the same plans the tactics, the same ideas and guidance. It just didn't work for Child1. He just didn't-- We say that when Child1 came along, everything we thought we knew about how to bring up Child2, […] everything was irrelevant. We were really confident, we were like, "We've done this, Child2 is amazing, we know what we're doing, we're good parents." And yet, and it was all out the window" (P21)*

However, in response to differing sibling characters, parents consider how they use different parenting practices:

> "*Child2, he didn't want anything like chocolate, or Haribo, until he was maybe even about four or five. He didn't want it, so there's no point using it as a, we didn't need to use it as a treat, say an incentive [laughs], with him. But with Child1, she's really taken to sweets, and she's, she behaves shall we say, better when sweets are involved. So it must just be their personalities, I suppose. We didn't have to use food with Child2, there may have been praise, or even his TV programme if he was good perhaps, but not food. But it was a quick fix for the second one, as well, because I need to get on with whatever I was doing with the first and it was just so much easier." (P18)*

The parent here discusses how she changed tactics and used other parenting practices between differing siblings, as one that worked with one child did not work with the other:

> "*The difference between the two of them, it's just crazy. I haven't done anything different; they are just two completely different characters. You have to almost rewire your parenting as you can't tar them with the same brush so to speak. Like, if you put Child1 on the naughty step, she gets really upset about it, she will cry […] and apologise and want to come off. [..] If you put Child2 on the naughty step, she just sits there, and gives you a smirk like "I can wait this out longer than you can, I'm not going to apologise". (P8)*

Parents also discuss the individual differences and characteristics of emotion regulation and temperament of their children:

> *"Child1 is very calm, almost shy at times […] He's very thoughtful and he's very considerate. He thinks of everything. He almost plans for everything. […] Child2, on the other hand, is completely unpredictable. She's a "maniac." (P6)*

One parent summarises how she feels in parenting, having had four children, each with their own behaviours, their own minds and tactics that may work for one but not the other:

> *"I think you just have to go with the flow for that particular child because, I've had four. You have to put your structure in for the individual child and not think you can do one big rule for all the kids, because you can't. They're so different. They could look exactly the same and you think, "Oh, they're just alike, but they aren't, they're completely different." (P13)*

Throughout the results, the idea that an individual's characteristics have been prominent in the action taken or the behaviour created. Parents have discussed the differences between siblings regarding the of use of food, personality, behaviour management, and emotion regulation. One parent discusses the need to understand each child as an individual, and to accept their children as their own entity, although they may be different to the 'normal' family unit:

> *"You just have to go with it and accept that they are different. It's hard to do because you just assume, they're going to be the same, and it's hard because when they turn out different, it's hard to accept that's normal. He's different to the rest of us. […] It's really hard because you do sometimes find that frustration, you go "Well he's frustrating, he's awkward, he's emotional" as if he's the outsider." (P21)*

Regarding the individual characteristics of the child, one parent discusses the idea that in fact, the individual differences and challenges faced may not be the 'fault' of the parent but the individual characteristics of the child themselves, and how that in turn may affect the parent's ability to deal with the situation:

> *"I thought I was a fantastic mum, a brilliant mum because I had a son that would eat anything. […] Then I had my second child. I parented her exactly the same. […] Absolute hell with her eating and I did nothing different. She lived on Quavers and milk for two months, […] it was the most stressful two months of my life. […] I did not parent them differently. I have learned to not assume it's the parenting because one minute I thought I was an amazing parent, the next minute I realised he was an amazing child and it wasn't really anything to do with my parenting.* It's luck of the draw*. I know some parents may instil their bad habits, […] but most trouble I think with kids is their personality. Child2 is strong willed and does not*

want to do anything that you want her to do if it hasn't been her decision. That is why she is bad at eating because she did not decide that's what she was going to have on her plate so she's not going to eat it. The right cartoon is not on the telly. She's not sat in the right seat at the dinner table. If all these factors aren't right, forget it. It's the child it's not the parent. I'm not a great parent, Child1's just an awesome child." (P5)

5.4. Discussion

The current study aimed to explore PFP and behaviours with their preschool aged children. In summary, the findings from the thematic analysis have highlighted the complexity of the relationship between parental and child emotionality, the parental feeding factors and children's EE behaviours. The qualitative results have illuminated the findings discussed within the path analysis study (Chapter 4), looking at the relationships between emotionality by both parent and child, and the EE behaviours discussed. A number of overarching themes are seen to interlace throughout the six main themes, including the influence that parent and child emotionality has on the feeding environment, parents' understanding of their own feeding practices, the intergenerational link between EE behaviours, and difference in siblings' individual characteristics regarding their eating and emotionality.

Firstly, focusing on the re-occurring theme of emotionality of parent and child, parents have discussed how, sibling dependent, the feeding practices used and the affect in feeding at the table made a difference to not only the feeding environment but how they feel for the rest of the evening. Previous research has suggested that the use of feeding practices is adapted dependent on the response of the children and their behaviours

(insert a ref). In addition, research has discussed how both feeding practices and child eating behaviours may be bidirectional in nature, with children responding to PFP, and likewise, parents responding to their child's individual characteristics and behaviours (Harris et al., 2016; Jansen et al., 2017; Roberts et al., 2018).

With regards to the findings relating to the emotionality of the child and the use of feeding practices, according to previous research, children's own temperament is related with both EOE and EUE behaviours (Messerli-Burgy et al., 2018), and plays a role within the relationship between the PFP and children's EE behaviours (Steinsbekk et al., 2016). This aspect of emotionality and feeding practices can be further explored regarding the parents own emotion regulation and the feeding practices used. Research suggests that parents who have difficulties regulating their own emotions may use emotional feeding practices, such as 'use of food to soothe' or 'use of food for emotion regulation', similar to how they would regulate their own emotion (Bost et al., 2014; Tan & Holub 2015). These feeding practices are previously discussed (section 1.4.2) to have a relationship with children's EE behaviours.

Parental discussions around the intergenerational development of EE from parent to child is supported in previous research suggesting a link between familial transmission of EE behaviours (Rodgers et al., 2014; Tan & Holub, 2015). The discussion regarding parental development of EE behaviours and the suggestion they were learnt via their own upbringing leads parents to reflect on the understanding of their own EE behaviours, and the intention to not create that behaviour within their children. The findings around parental secretive or hidden overeating behaviours suggest a link to the use of feeding practices conducive to the development of maladaptive eating behaviours in young children. Saltzman and colleagues (2016) found that parental binge eating behaviours lead to the use of nonresponsive feeding practices with children, such as use of food for

emotional regulation, PTE and restriction, associated with the development of EE behaviours. With research already suggesting a familial transmission of EE behaviours from parent to child (Tan & Holub, 2015; Jahnke & Warschburger, 2008) this is discussed in interviews not only retrospectively by the parents on their experiences growing up, but currently with the parents' children showing certain EE behaviours. As an example, P21 discusses how they grew up with very restrictive feeding practices by their own parents, and due to this would eat 'spoonfuls of sugar' when left alone. They discussed how only recently have they found their mother had a maladaptive emotional connection with food, namely EE, when they were younger and suggest this may have been the reason why they do the same. They further discuss how they emotionally attempt to neutralise emotional situations with their children by providing food, and the youngest is showing signs of early EE behaviours and traits.

Lastly, one of the main overarching themes found and discussed throughout the findings, is the idea that children's individual characteristics may be a moderator for both of use of feeding practices, and the use of emotionality in the development of EE. Many parents have discussed how parents have treated their children growing up exactly the same, weaned them and fed them the same, however siblings can be completely different from each other in their food choices, behaviours and emotionality. As previously discussed, the idea that feeding practices may be bidirectional in nature suggests that the children's own individual characteristics may be the moderator between the relationship between feeding practices and eating behaviours. This is seen with many parents discussing the same feeding practices like UFAR, or behaviour management like 'the naughty step' with both children, however only finding it works with one child and not the other (section 5.4.2.6.3). The idea of the child's individual characteristics can be seen throughout the findings, with parents discussing their differences across all themes, and the differing

responses they take depending on the sibling in the mealtime environment, the use of feeding practices, behaviour management and emotion regulation.

Previous research (Haycraft et al.,) focusing on PFP and EE behaviours has focused on the notion and argument that the PFP may be the stimulus and the EE behaviour the response in the development of EE behaviours. This study suggests a multidimensional relationship, including a bidirectional relationship between the use of feeding practices within and outside of the mealtime environment and EE behaviours, mediated by the parents emotional regulation and the child's own individual characteristics. The emotional context in which feeding may take place, as well as how the child reacts to a given stimulus or situation, may have an impact on not only the PFP used but how the child responds to said feeding practices and the subsequent potential EE behaviours.

5.4.1. Strengths and Limitations

The large sample size (n=21) within the study allowed large amounts of interview data to be explored, and to obtain in-depth behavioural insights into the family experiences within feeding. There are however, a number of limitations that provide opportunity for further research. Firstly, findings from qualitative research are not expected to be generalisable to other populations, but may be transferable in its understanding that others may go through similar situations and so could relate to the experiences. Due to the participants from the qualitative study coming from the pool of previous quantitative respondents, a purposive sampling strategy meant the sample may have attracted participants who were particularly interested in, or have issues to discuss, regarding their feeding practices and eating behaviours (Higginbottom, 2014). Secondly, similar to the previous quantitative study where the pool of qualitative participants was contacted from, the level of ethnic diversity was low, with just 2 parents being of a black or ethnic minority.

In addition, out of the 21 parents, only 1 was the father with the other 20 being the mother of the household. Another limitation of the study would be that the results and themes discussed are subject to the parents own perceptions of influences on their feeding practices. However, due to the previous path analysis and the relationship between these, the qualitative holds strengths within its findings. Nonetheless, these limitations provide opportunities for future research with a more diverse sample both in terms of ethnicities and gender.

5.4.2. Conclusion

Although a small number of studies have discussed the use of feeding practices parents use with their children, to our knowledge this is the first qualitative interview study to have explored parental views on their and their child's emotionality, their use of feeding practices and EE behaviours within the family. The study has helped to explore and uncover the multifaceted relationship underlying feeding and eating in the family unit, highlighting a number of important influences upon the maternal PFS and PFP of parents with their preschool aged children. It portrays the challenges faced by parents trying to create a healthy feeding environment, especially those with differing siblings.

6. Discussion

Introduction to Chapter 6

This final chapter provides an overview of the results and the discussion of the thesis findings. The original aims and hypotheses of the thesis will be discussed and summarised, and then the overall results will be presented integrating the conclusions from each of the studies.

6.1. Aims and Objectives of the Thesis

The aims of this thesis were to investigate the role of PFP in preschool aged children EE behaviours, focusing on the interplay between parent and child emotionality within the relationship. The objectives were to explore previous literature focusing on the main PFS and practices suggested to be associated with EE behaviours in preschool aged children. Conducted via a systematic literature review and meta-analysis, this sought to identify which PFS or PFP have been previously discussed in the literature to have an association with children's EE behaviours.

The second and third research objectives were to explore the relationships between parents and children's emotionality, PFP and children's eating behaviours, specifically EOE and EUE. Conducting both a quantitative path analysis and a qualitative interview based study, we highlighted and uncovered the relationship between these factors and children's EE behaviours, and further explored the findings via the parent's own experiences within children's EE behaviours. The cross-sectional study allowed the interrogation of specific relationships between parent and child emotionality, parental feeding practices and EE behaviours whilst controlling for all other factors entered into the analysis. This examined the contribution of emotional factors both within and away

from the mealtime environment, with parent ER, parent affect in feeding, and children's own temperament explored within this. The thesis then further sought to explore the parents own experiences of these factors, illuminating the findings from the path analysis to highlight the challenges faced when dealing with emotional outburst, children's eating behaviours, and parents own views on their parenting behaviours. Finally, this chapter will now discuss the relationship between variables and the complex interplay between parent and child emotionality, feeding practices and eating behaviours.

6.2. Summary of Results

The results of this thesis are summarised below. Firstly, the direct associations between PFS and feeding practices with EE behaviours in preschool aged children are discussed. Second, the links between parent and child emotionality and associations with PFP and children's EE behaviours. Finally, the parents own experiences of children's individual differences and temperament characteristics and how these relate to the use of feeding practices and the discussion around EE behaviours.

There were observed similarities across the findings from the systematic literature review, the path analysis and parents' experiences across the interview data. Figure 26 presents the direct relationships found with positive and negative associations with EOE and EUE behaviours across the systematic review (chapter 3) and path analysis (Chapter 4) within the thesis.

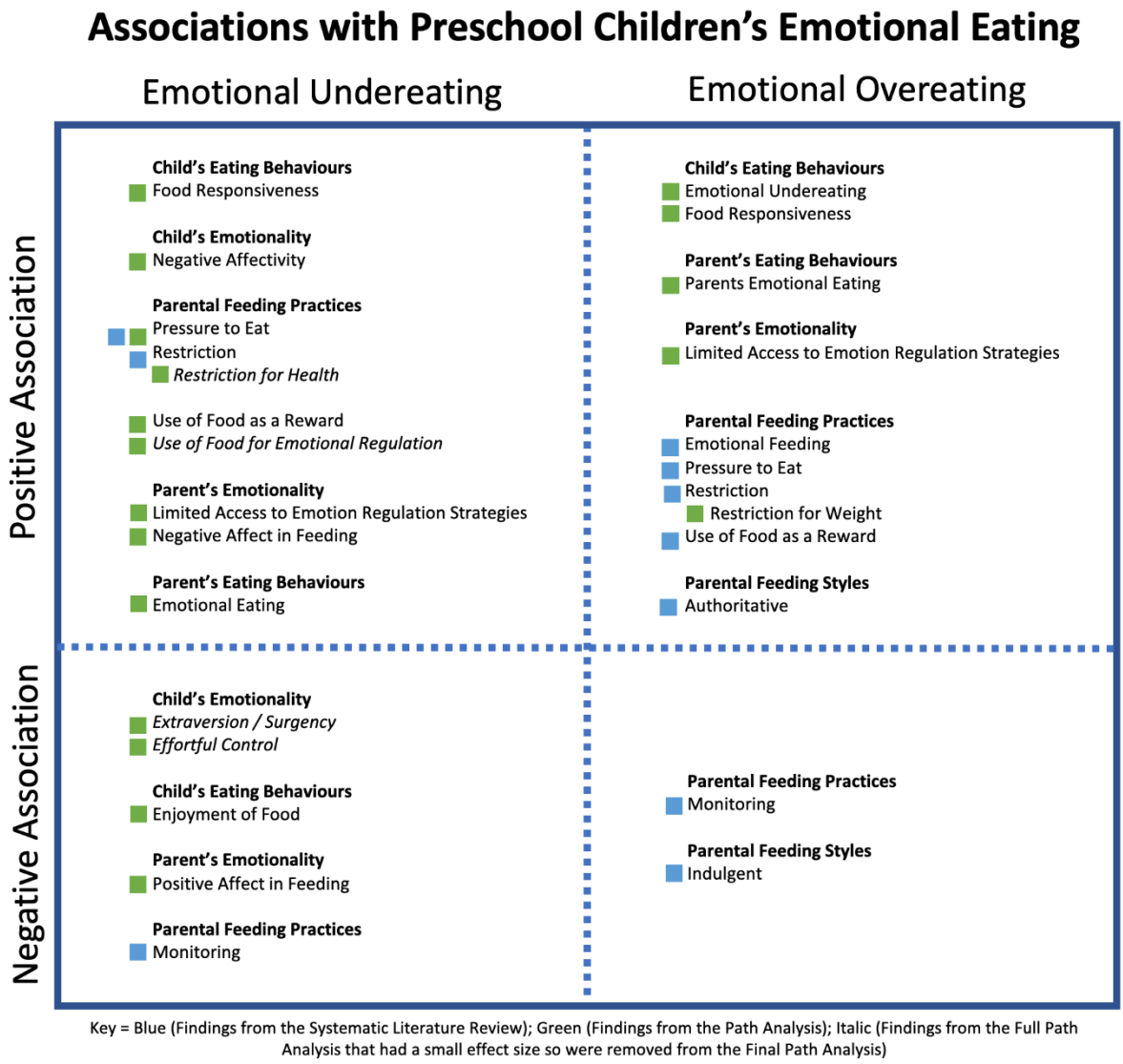

Figure 26: The Positive and Negative Associations of Parent and Child Factors and Emotional Eating

Figure 27 highlights the relationships between the path analysis and the illumination of the data explored qualitatively with parents within the interviews (Chapter 5). The findings from both the path analysis and the qualitative study highlight the main factors related to children's emotional overeating and undereating behaviours. The associations between parents' restrictive feeding practices, parents' own EE behaviours, child FR and EOE provide the greatest weight of evidence. These may mean that nature and nurture

both play a role, for example, there may be element of partly genetically mediated appetite traits, with children preferring snacks and puddings to vegetables as shown qualitatively by the theme ‘use of food for non-nutritive purposes’ (section 5.3.3.2) in addition to an environment that models the child to emotionally overeat ‘the mirror of emotional eating’ (section 5.3.3.3). Furthermore, with the parents’ inability to access emotion regulation strategies associated with both the parents’ EE and child’s EOE behaviours, this strengthens the potential relationship between parent emotionality and EE behaviours. This is shown qualitatively by the challenges with both parents and child’s emotionality and eating in ‘the catalyst of emotion’ (section 5.3.3.6).

In contrast the EUE correlates have more complexity within the path analysis and qualitative evidence. EUE is clearly linked within the thesis to such appetite characteristics as lower EF, and broader emotion characteristics such as negative affect. The role of feeding practices however does also seem to be key. The use of UFAR and PTE may be used by parents wanting their children to eat more, given that it shows the children are perhaps lower in EF and less motivated by it, discussed qualitatively within ‘the mealtime battleground’ (section 5.3.3.1). Similar to the relationships with EOE, parents own inability to regulate their own emotions through LAERS may suggest a relationship between emotionality and EE behaviours ‘the catalyst of emotion’ (section 5.3.3.6). Lastly, the association EUE with both between parent negative affect in feeding and child’s negative affectivity may suggest that a negative emotional environment plays a role within EUE behaviours. This is suggested qualitatively when discussing the emotional atmosphere within ‘the mealtime battleground’ (section 5.3.3.1).

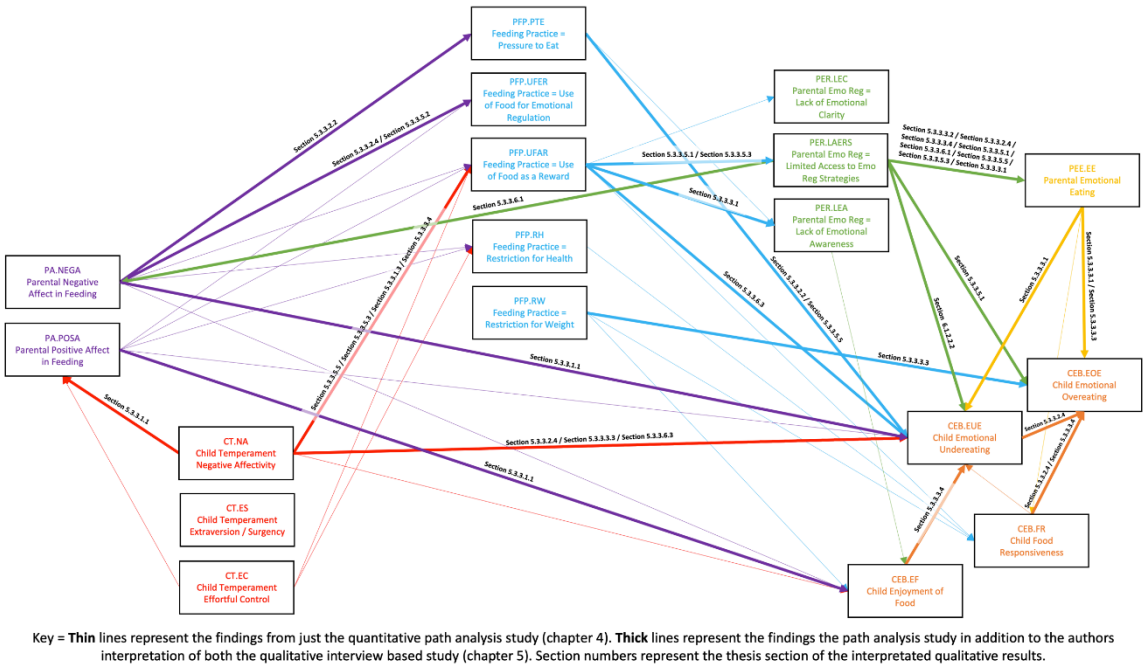

Figure 27: The Relationship between the Path Analysis and in-depth understanding via Qualitative Interpretation

6.2.1. Parental Feeding Styles and Practices and Preschool aged Children's Emotional Eating Behaviours

6.2.1.1. Parental Feeding Styles

Out of the four PFS discussed across the thesis, in particular within the background (section 1.3.2) and within the Systematic Literature Review (section 3.4.2), two were found to be of significance and needing further discussion. Purely within the systematic review, an authoritative feeding style was shown to be positively related to EOE behaviours (Hankey et al., 2016), and an indulgent feeding styles negatively related to EOE behaviours (Hughes et al., 2016). However these findings from our systematic review are contradictory to the majority of the previous literature that concludes authoritative PFS is a protective factor and indulgent PFS a non-protective factor in such

maladaptive eating behaviours (Berge, 2009; Hurley et al., 2011; Shloim et al., 2015). It is reasonable to deduce that a plausible mechanism underlying these associations favours the findings of previous literature, rather than what we found. As discussed previously (section 1.3.2), parents with an authoritative feeding style actively encourage their child to eat, but with supportive behaviours sensitive to the child's needs. With this in mind, cross-sectional studies, which although unable to establish causality, conclude that an authoritative feeding style is associated with lower risk of obesity and higher consumption of healthful foods such as fruit and vegetables (Rodenburg et al., 2012; Patrick et al., 2005), and a negative association with EE in 6 to 8 year old children (Topham et al., 2011). Cross-sectional studies have also concluded indulgent PFS are associated with higher BMI status in children (Hughes et al., 2008; Hughes et al., 2011; Vollmer et al., 2015). While it is suggested that indulgent PFS and undereating behaviours may be explained by parents not placing demands on their children (Goodman et al, 2020), these relate more to food neophobia and not on EE behaviours. Rather it is more likely that indulgent PFS creates an indulgence of food for a child to enjoy, and using food as an 'expression of love' in this way opens the path to EOE.

6.2.1.2. Parental Feeding Practices

The thesis has provided a plethora of results showing the relationship between PFP and EE behaviours in preschool aged children. Figure 26 above summarises the PFP that have been associated, positively or negatively, with EUE and EOE in preschool aged children. Within both the systematic review and quantitative study, PTE and UFAR have been associated with EE behaviours. PTE is seen in both the systematic review and meta-analysis to be positively associated with EUE behaviours. UFAR on the other hand was found to be positively associated with EOE behaviours from the systematic review,

yet positively associated with EUE behaviours in the path analysis. These findings are very much in line with previous literature, with studies finding UFAR positively associated with EOE and weight status (Van der Horst, 2017; Roberts et al., 2018), and PTE associated with EUE and weight status (Hughes et al., 2016; Haycraft & Blissett, 2012; Berge et al., 2015). Interestingly this notion that UFAR can also be associated with EUE is also supported by previous cross-sectional studies, with Powell and colleagues (2011) finding a relationship between parental UFAR and EUE ($r=0.28$, $p<0.01$) and Kroller and Warschburger (2008) with UFAR and lower fruit and vegetable intake ($B= -0.255$, $p<0.03$). These findings could suggest the PFP unintentionally reinforces FF and other food avoidant behaviours, such as EUE. Alternatively, the children's EUE may reinforce the parents to use food as a reward for a given behaviour, especially for eating something less desirable, unintentionally reinforcing FF and other food avoidant behaviours, such as EUE. The differences between the findings of the systematic review and quantitative study may be due to the number of variables controlled for within the path analysis. Prior to the path analysis, the Pearson correlations (table 9) found a significant positive association between UFAR and EOE, as well as UFAR and EUE behaviours. This may therefore suggest that by including other factors such as parents emotionality and child temperament within the full path analysis model (figure 13), may have removed the effect between UFAR to EOE, suggesting other factors may be at play.

Research also shows that use of controlling feeding practices such as PTE may lead the child to reduce enjoyment of eating and use of EUE behaviours (Morrison et al., 2013; Jansen et al., 2012). However, due to the cross-sectional nature of the studies surrounding this literature, causality cannot be established. It is just as likely that having a child with EUE behaviours may cause the parent to use PTE to ensure the child consumes a sufficient number of calories. It may be just as likely that a child with EOE behaviours may be high in food approach behaviours such as FR and EF (section 1.2), and may then be more susceptible to the use of food as a behaviour or reward element.

The qualitative study illuminates the findings from both the systematic review and the path analysis (Figure 27) by discussing parents own experiences using both PTE and UFAR feeding practices and their discussion around their child's EE behaviours. Section 5.3.3.2.2 discusses the challenges with children's undereating behaviours and PTE and the association between these:

> *"One time I even tried to force the spoon in her mouth because it had gotten so bad […] and I was like-- You go into panic mode, […] you think, "Well if they have one taste of it, they might think, 'Actually I do like it'". […] and I could see her looking at me frightened, and I thought, "Oh my God, what am I doing to my child? (P5)"*

In addition the use of food as a reward (section 5.3.3.2.1) is associated with children's overeating behaviour past the point of them claiming they are finished:

> *"Well if they've left all their veg then I'll say to Child1, "Four mouthfuls and then we'll get your pudding". […] Some days I'll say, "Today you can have some ice cream for pudding" so then it becomes a treat. […] Only if he is being slow or tired I'll maybe say "the quicker you finish your dinner, the quicker you can have pudding", almost reminds him what's coming. He'll get on and eat it then. (P6)"*

These highlight the salience of PFP in the mealtime environment and the association these have with both EOE and EUE behaviours. It is also further explored (section 5.3.3.5.5) as parents show understanding in the use of their feeding practices, and realisation of the development of their child's eating behaviours:

> "*that's another thing that constantly, wondering whether you're doing the right thing as a parent. So, this whole, "You can't have pudding unless you've eaten your dinner." Then when you think about it, am I over-feeding them? I'm forcing them to finish a plate of food that they might not have space for, because they're motivated by something sweet afterwards, but then, what do you do? (P21)*

A number of PFP within the thesis have been found to be associated with both EUE and EOE behaviours. The feeding practices Restriction, UFAR, UFER, and PTE have all been discussed in their positive association with both EUE and EOE behaviours, and monitoring in negative associations with both EUE and EOE behaviours. This idea has been previously touched on in Section 1.2.1, as EOE and EUE are not opposites of each other and in fact have been shown to positively correlate with each other in a number of studies (Herle et al., 2017; Sledden et al., 2008). This has also been found within this thesis, as the path analysis (chapter 4) showed a strong significant positive association between both EUE and EOE, showing children who show EE, may do so with both aspects. Dependent on the type of emotion, be it acute or chronic, as suggested in studies with adults (section 1.2.1), the child may learn to either overeat or undereat dependent on the emotional intensity of the situation. Findings from the qualitative study supports the emotional intensity and food behaviours:

> *"If she's upset she won't touch her food. If she's just sad and we offer her a cake then her face will light up and she will suddenly just forget that she was sad. As for food, upset, yeah she'll go away from food. (P7)*

Further research looking into the differing types and severity of emotional situations, such as boredom, stress, sadness and fear, would be interesting to see if children in fact

can distinguish between different emotional situations in their usage of EUE or EOE behaviours.

6.2.2. The Interplay of Parent and Child Emotionality, Parental Feeding Practices and Preschool Children's Emotional Eating Behaviours

Assessment of a number of factors within the quantitative path analysis study, and an illumination via the qualitative interview based study, enabled the examination and discovery of the relationship between parent and child emotionality on the salience of child EE. Whilst controlling for confounders and variables within the path analysis, significant associations drawn firstly with the ability to access strategies to regulate one's own emotions and how they feel during the mealtime environment. Secondly with child emotionality, more specifically the negative affectivity or ability controls ones' emotions and the use of feeding practices and preschool children's EE behaviours. These were then identified by the authors' interpretation as areas to explore within the qualitative interview study; with Section 5.3.3.6.1 highlighting parental inability to regulate one's emotions and the negative feelings throughout the mealtime environment, and sections including 5.3.3.6.2 highlighting the experiences parents have with their child negativity affectivity and EUE behaviours (figure 27):

> *"If Child2 is in one of her moods, she can end up throwing a right strop, throwing the plate around, which is hard because you end up losing your temper and it's hard not to have to really scream at them. Obviously, that then makes it worse. It's normally a case of calming her down, […] then she'll get back into it, maybe then she'll, maybe eat." (P6)*

However with both of these studies, with the directionality and causality unable to be established from the findings, future research would therefore benefit from a follow up longitudinal design to discover the directionality of the emotionality and the development of EE in preschool aged children.

6.2.2.1. Parental Emotionality

Discussing then the associations of parental emotionality and EE behaviours, the path analysis (chapter 4) first found that, whilst controlling for all variables, parents who had limited access to emotional regulation strategies also reported greater EE themselves, as well as reporting greater emotional over and undereating in their children. With the relationship between parents own EE and child EE behaviours discussed in previous literature (Tan & Holub, 2015; Herle et al., 2017) and our current path analysis (section 4.3.3.2), the intergenerational pathway of EE is supported, with numerous studies finding a strong link between parent and child EE behaviours (Tan & Holub, 2015; Herle et al., 2017). It is already known that parental EE and children's EE are positively correlated (Jahnke & Warschburger, 2008), and that emotional feeding practices are related to this relationship (Tan & Holub, 2015). It is interesting therefore to find within this analysis a path between parents lack of ER, parental EE, and both EUE and EOE in preschool children. This suggests if a parent is unable to correctly access strategies to control their own emotions, they are more likely to use food as a regulator themselves, and more likely to have children emotionally eat. The interesting component of the qualitative study however, is it is of the first to explore the parents understanding of their own EE and the challenges they face with their preschool aged children that may lead them to these behaviours:

> "*He's going to just turn out like me. He's going to be an emotional eater. When you've had a bad day, you're struggling to not go straight to the cupboard, he's screaming at the top of his voice, and you're conscious that the neighbours are going to be annoyed with you. […] You just say, I know I could just solve it an easy way. It's a constant battle. It's 50/50 really. Sometimes I do just say, "Do you want some crisps?" He's like, "Okay. Let's do that then." You just sit there eating crisps feeling like a failure. This is the only way I can control my children is by giving them treats (P21)".*

This idea surrounding the relationship between parent emotion regulation and EE behaviours suggests that parents LAERS may be a factor in children's EOE and EUE, dependent on whether parents themselves use food as an emotional tool. Although previous studies have linked EE behaviours to adolescents' and adults' own difficulties in ER (Vandewalle, Moens & Brate, 2014; Gouveia, Canavarro & Moreira, 2019; Crockett, Myhre & Rokke, 2015), to the authors knowledge this is the first of its kind to find an association between parents own difficulties in ER and preschool children's EOE and EUE behaviours. These paths have also been illuminated by the qualitative interview findings before where parents discussed their challenges with their own emotion regulation and the salience of their children's EE behaviours. This novel finding suggests that a parents' inability to access emotion strategies for their own regulation may teach them to use similar maladaptive strategies for their children, supported by the finding that parents own use of EE may act as a partial mediator in the relationship between parent emotion regulation and children's EE behaviours (figure 22).

Secondly, the path analysis suggested that not only were parents' own limited access to ER strategies linked to children's EUE behaviours, but also how the parents themselves

emotionally felt within the feeding environment. With the path analysis finding that a positive affect in feeding was negatively associated with EUE, and a negative affect in feeding was positive associated with EUE, this suggests that experiencing positive emotions such as feeling loved and appreciated while feeding could be a protective element in the development of EE. Alternatively, due to the lack of directionality from the cross-sectional path analysis, one could also suggest that a child with less EE behaviours may be less challenging to feed and thus eliciting a more positive feeding environment. This was supported by the qualitative interview study, whereby Section 5.3.3.1.1 discusses feelings of positivity within the feeding environment and fewer EUE behaviours:

> *“I get excited because he loves food and then it's a pleasure feeding him. I got really excited about mealtimes and I relished in the fact that he ate everything I prepared for him and I absolutely loved it. I enjoy dishing his food up because I know he's excited, he can't wait to see what he's got, he tends to say, "Thank you, this is lovely," he eats it all and it's not a stressful experience” (P6)”*

This idea of affect in feeding is supported in previous literature with a cross-sectional study (Rodgers et al., 2014) finding that maternal negative affect, such as feelings of anxiety, stress and depression, positively linked to EE behaviours in children. Rodgers and colleagues (2014) focused mainly on maternal affect, with feelings within themselves such as elevated stress and anxiety, and found they positively correlated with both maternal ($p<0.001$) and child EE ($p<0.05$). This however focused on maternal affect away from the feeding environment, with questions relating to internal feelings of negative feelings. A couple of items must be address however regarding this study. First of all, the direction and relationship they suggest is purely theorised by the literature as, being cross-sectional, they are unable to establish causality. Secondly, the use of the

DEBQ parent version, as discussed in detail in section 1.2.1, is more associated with overeating traits within EE behaviours instead of our findings with EUE behaviours.

Therefore, to our knowledge, this is the first study to explore the parental emotional context and feelings within the feeding environment, using the Feeding Emotions Scale (Frankel et al., 2015), and finding that feelings of negativity are associated with EUE maladaptive behaviours, and feelings of positivity are associated with protective factors towards EUE behaviours. Although causality from the path analysis cannot be established, it is interesting nonetheless that whilst controlling for all variables, parental feelings of negativity whilst feeding and the inability to access strategies to regulate these feelings both link to high EE behaviours in preschool aged children. This finding is useful for further research and future intervention development, potentially by parents understanding the impact their feelings can have at mealtimes and its relationship with EE behaviours. These feelings and experiences have been further explored in the illumination of the path analysis, with parents discussing the negative emotions felt whilst feeding and the impact that had on their own mood and behaviours (section 5.4.2.1.1). To the authors knowledge, the discovery regarding parent's affect in feeding are a novel finding and contribute to the literature around parent affect in feeding and its relationship with preschool EE behaviours. This is very interesting to note as we conclude from our path analysis, that PFP are not the only variables associated with EE behaviours in children, but other emotionality factors within the feeding environment may also predict child EE.

6.2.2.2. Child Emotionality

Furthering these findings by discussing the relationship with parent and child emotionality and EE behaviours, negative affectivity, described as showing negative emotional states and high levels of anger and frustration (section 1.5) were shown to positively correlate with children's EUE behaviours. This is supported by the qualitative interview study whereby section 5.3.3.6.3 highlights the child's negative affectivity and EUE behaviours:

> *"Child2 is strong willed and does not want to do anything that you want her to do if it hasn't been her decision. That is why she is bad at eating because she did not decide that's what she was going to have on her plate so she's not going to eat it. The right cartoon is not on the telly. She's not sat in the right seat at the dinner table. If all these factors aren't right, forget it. (P5)"*

Supporting the path analysis with previous research, a longitudinal study (Steinbekk et al., 2018) found measures of negative affectivity in 4 year old children predicted EE behaviours 2 years later. Although our path analysis cannot establish causality due to its cross-sectional nature, it supports previous literature that child negative affectivity is linked to children's EE behaviours. Interestingly however, our path analysis furthers the findings from previous literature, showing not only the relationship between negative affectivity and children's EUE, but that parental positive affect in feeding may have acted as a partial mediator this relationship. This suggests therefore that the child's own heightened levels of anger and frustration may be associated with EUE behaviours, however a parents' positive affect in feeding, feeling loved and appreciated may be a protective element in the development and strength of this relationship. Although the findings from the path analysis are still cross-sectional, it is interesting nonetheless that feeling negative emotions whilst feeding, and the child's heightened feels of anger and frustration both link to the salience of EUE behaviours in preschool aged children. These

feelings and experiences have been further explored within the qualitative illumination, with parents discussing the negative mealtime environment and the child 'tantrums' and how the relationship with PFP and affect whilst feeding had on their own mood and behaviours (section 5.4.2.1.1)

This thesis highlights many novel and innovative findings regarding the relationship between parental and child emotionality, PFP and EE behaviours in preschool aged children. Firstly, parents' negative feelings of emotions and the inability to regulate said emotions have been suggested to be related to maladaptive EE behaviours in preschool aged children. Negative feelings within the feeding environment are also associated with increased PFP, specifically PTE linked discussed previously to link with children's EUE behaviours, UFAR, UFER, and Restriction shown to link with children's EOE behaviours. Conversely, positive feelings within the feeding environment show a negative association with the use of such controlling and restrictive feeding practices. Secondly, the idea that children's own emotionality plays a role within not just the development of their eating behaviours, but the use of feeding practices and the relationship around this is beginning to surface. With the path analysis showing children with higher levels of negative affectivity and effortful control showing positive and negative associations with UFAR respectively, this suggests individual differences in child temperament may be an important factor within the parents' decision to use certain feeding practices. This discussion around individual characteristics of children's temperament is further explored later (section 6.2.3.1).

These findings demonstrate that a negative feeding environment, a child with a more difficult temperament, and the inability of the parent to access strategies to regulate their own emotions are all associated with maladaptive EE behaviours in preschool aged children.

6.2.3. Children's Individual Differences and Characteristics on the Use of Certain Feeding Practices and Preschool Children's Emotional Eating Behaviours

The illumination of the findings from the path analysis created an interesting element of discussion regarding the child's own individual characteristics and the link toward the use of PFP and EE behaviours. The qualitative study explored how parents faced a 'battle of wills', a continual feeling of compromise between what is best and practical for the child. Parents discussed the unique and individual experiences and challenges at the mealtime dependent on the individual child. Many references were made to different individual characteristics of children and their use of differing feeding dependent on 'what works' for each child or siblings, and how behaviour management is not a 'one-size fits all' approach (section 5.4.2.6.3). Parents also highlighted their realisation that their own emotions affect the feeding environment and mealtime atmosphere, with many normalising these behaviours with 'everybody does it' (section 5.4.2.5.4).

6.2.3.1. Children's Individual Characteristics of Behaviour

Within the qualitative interview study, parents discussed the individual characteristics of their children and the adaptations they make to their use of feeding practices and behaviour management. These individual characteristics of children's behaviour are widely discussed within Section 5.4.2.6.3, with parents discussing how they weaned and managed their children using the same methods and management of behaviours, such as UFAR, or behaviour management like 'the naughty step'. However the use of a blanket strategy approach seemed ineffective, as the 'individuality' of the child meant

that while one child may respond well to the parent, the other would not. This meant therefore to get the same behaviour outcome parents would look to use different techniques between siblings. Many of the parents conclude the realisation that it may not be their parenting, which has to them remained stable throughout, but instead the way the child reacts to this parenting, having to use differing strategies to accommodate this. This was an overarching finding of the qualitative study and once again supports the idea of a bidirectional relationship of parent and child behaviours, which is supported by previous cross-sectional quantitative research by Roberts and colleagues (2018) which showed that parents used certain feeding practices with children who are receptive to that practice, e.g. UFAR with children highly behaviourally responsive to food cues. The idea that feeding behaviours may be bidirectional in nature may be furthered by the notion that both the strategies of the parent and the response of the child may be moderated by the emotionality or temperament of the child themselves. This mediating role of child temperament, discussed in Section 4.4, is further supported in existing research with cross-sectional studies unpacking the relationships between these 3 elements. Holley and colleagues (2020) investigated the moderating role of child temperament on positive feeding practices and children eating behaviours, finding children's emotionality significantly moderated the relationship between parents involved their child in the mealtime choices and children's FF ($B=0.32$, $t=3.78$, $p<0.001$). Horn and colleagues (2012) investigated, using a sibling design, the role of child temperament and the use of PFP. They found parents were more likely to use controlling feeding practices with a child with difficult temperament traits. However, due to the cross-sectional nature of their research design, it may in fact be in case that these attitudes are bidirectional. This is the first study to the authors' knowledge, to focus specifically on the relationship of both parent and child emotionality and its relationship with both the use of controlling and restrictive feeding practices and children's emotional eating behaviours.

6.2.4. Summary of Contributions to the Literature

This thesis has contributed to the literature in a number of ways, of which are described below. The systematic literature review and meta-analysis, to the authors' knowledge, was the first of its kind to systematically review the published research focusing on PFS and PFP and EOE and EUE behaviours. Previous systematic reviews have focused on eating behaviour in its entirety, focusing on an overall development of children's eating behaviours, and in the older child population, not specifically preschool (Shloim et al., 2015; Litchford et al., 2020). The systematic literature review found that specific PFS, including authoritative and indulgent, and PFP, including restriction and monitoring are associated with EOE and EUE behaviours in the preschool aged children. Following on from the findings of the systematic review, the quantitative path analysis found that parent and child emotionality, specifically parents LAERS, and children's negative affectivity were associated with children's EE behaviours. To the authors' knowledge, this large cross-sectional study was the first of its kind to analysis the multifaceted relationship between parental ER, parent affect in feeding, PFP, child temperament and parent and child eating behaviours, specifically EE, in the younger aged population (figure 26). The findings from the path analysis enabled a quantitative understanding regarding the relationships of the variables and the complex interplay between parental strategies and children's behaviours. This led to the third study, a qualitative exploration of the experiences parents have regarding the use of their feeding practices and how emotionality may play a part in how and what happens regarding feeding their school aged child. To the authors knowledge this is the first qualitative study to focus on the interplay between parents own emotional challenges and the use of their feeding behaviours with their preschool children. In addition, the exploration and enlightenment

of the child's temperament and behaviours, and the illumination of the reactive relationship between PFP and children's behaviour.

When focusing on psychological theory behind EE, the findings of the three studies are most in line with the five-way model of emotional eating (section 1.2.1.3; Macht, 2008). Regarding EOE, the path analysis highlights how both the child's emotional arousal of food via EF, and the need to eat to regulate certain triggers via the parents' ER and EE, are associated with children's EOE behaviours. Regarding EUE, emotional arousal of behaviours again suggests that parents LAERS and their own EE behaviours may be integral within this relationship.

6.3. Strengths and Limitations

A number of strengths of the thesis will be discussed, including the research design, the use of a meta-analysis to synthesis data, the large sample size of both the quantitative (chapter 4) and qualitative (chapter 5), and the use of a number of parent and child factors to explore the relationship within a mixed methodology. This thesis offers an in-depth understanding of the relationships between parent and child emotionality, the use of PFP and EE behaviour in preschools aged children. A major strength of the thesis is the large sample size in both the quantitative path analysis (n = 1,712) and the qualitative interview based study (n = 21). A large sample size gave the power calculation needed for the path analysis, and the saturation level for the thematic analysis. Another strength of the thesis is the research design of the studies, with the completion of a systematic review and meta-analysis, allowing for quantitative synthesis of the literature reviews findings. The use of a path analysis allowed for a number of variables to be controlled for and measured at one time, exploring the relationship between variables whilst

controlling for confounders. It provides not only a graphical representation of the relationships between variables, but also at a glance, indicates which of the variables appear to have a stronger, weaker, or no relationship (Salkind, 2010). Another research design strength of the literature is then the use of a mixed methodology, illuminating the findings of the path analysis with a thematic analysis to explore the parents own thoughts and experiences. Thematic design provides a flexible approach to explore the data, providing a complex, rich and detailed account of the interview data. It is a useful method for highlighting similarities and differences across participants and generating unanticipated insights unconstrained by a tabular form (Braun & Clarke, 2006). All of these design strengths, alongside a large number of variables that have been explored across the thesis, allows for relationships to be drawn, arguments made and conclusions for further research to be recommended.

Nonetheless, certain limitations of the present studies must be noted and considered. The limitations of the thesis include such notions as a small number of papers within the systematic review and meta-analysis (n = 6), the cross-sectionality of the path analysis, self-report measurements and a non-representative sample within the path analysis and interview based study. Focusing on the systematic review, the small number of papers would conclude that the findings must be addressed with caution, as findings may be highlighted and conclusions drawn, however a large data set would be more beneficial. The small data set was due to the constraints of the inclusion and exclusion criteria within the systematic review, with the main factor as suggested previously being age. Many studies focus on older children who show more independence with food intake and thus salience of eating behaviours. With Ashcroft and colleagues (2008) suggesting EE to develop around 4 to 10 years old age, many studies looked to that age range for their research population, and thus were excluded from the systematic review.

Focusing in particular on the path analysis, the cross-sectional design of the analysis meant that causality was unable to be established. Cross-sectional data, being unable to show directionality, instead gives a snapshot of time into relationship between the variables and allows researchers to quickly and efficiently look at the potential relationship in the data before further, more rigorous research is done. The benefits of a cross-sectional and questionnaire design mean the study is able to recruit a larger number of participants at any one time, such as the current thesis (n = 1,712). Regarding the sample size, although discussed as a strength in must be noted as a limitation also. Due to the purposive sample through online social media and nursery newsletters, the sample of participants is not generalisable to the current population. Focusing in more depth into the recruitment method, even using the gender-neutral term 'parents' invited to take part concluding in 98.7% of mothers completing the questionnaire about themselves and their child, in comparison to completion from the fathers. This is mirrored across other research studies, with Leach and colleagues (2019) finding campaigns inviting parents to participate resulted in a very low recruitment of fathers.

The factors highlighted above concluded that the path-analysis sample were mainly British, female, and highly-educated to a university level. The sampling of both the quantitative path analysis and interview based study must then be noted, as purposive sampling meant that parents within a 30 mile radius to the research centre who chose to take part in the questionnaire were then invited to take part in the interview afterwards. This concluded in parents being recruited from the already predominately female and high socio-economic saturated pool of participants. It is interest to note however that a higher percentage of the interview participants were from black or ethnic minority groups and work part time in comparison to the quantitative cross-sectional study. This may be due to the geographical implications regarding the researcher able to travel for the

interview around the Warwickshire and West Midlands area, and the availability of time allow themselves to be interviewed.

Another limitation is the self-report nature and responder bias that may be seen across the studies, as in the cross-sectional study, parents were asked to fill in the questionnaire regarding themselves and their preschool aged child, including their own height and weight measurements, thus making it impossible to determine the accuracy of their report. Although height and weight were not a main factor within the study, self-report of demographics and questionnaires can create and element of reporting bias. With self-report, parents are asked to report not only on their own feelings, emotions and eating behaviours, but on their child's on their behalf. With this in mind, potential bias from parent report could be seen if, for example, they were or were not themselves an emotional eater, they may perceive their child's EE behaviours differently. Work has however previously established that parental report of their child's eating behaviours tends to be accurate and matched by observational studies (Blissett, Farrow & Haycraft, 2019). In addition to the reporting, responder bias may be seen in both study 2 and 3, with study 2 open to parents interpreting the questions, responding the way they believe the researcher may want to hear. In addition, study 3 being face to face with the researcher, parents may wish to disclose less information regarding any challenges and issues as they may have to discuss sensitive or embarrassing topics about their or their child's eating behaviours.

6.4. Future Research Directions

Future research directions can be taken from the findings within the thesis, including delving further into the relationship between EUE and EOE within our preschool children. The notion that children's individual differences, temperament and emotionality could be

the stimuli with the parent responding with the use of certain parental practices and behaviours needs to be further addressed, to support the rationale behind parents use of certain practices and the development of emotional eating behaviours. This is due to the cross-sectional nature of the current research, and thus direction of association cannot yet be established. Future study designs such as twins or sibling comparisons would benefit this area of research, being able to explore the differing temperament of the children alongside the parental behaviour. The findings from the path analysis and interviews highlight the relationship between the children and parents behaviour. Future research could explore the potential of the child's temperament as the generator for the parents behaviour, with the children's individual differences and emotionality in the feeding and mealtime environment adapting the way the parents may deal in that current situation. Furthering this research by conducting a twin or sibling comparison design, exploring the differing individual sibling temperaments and the parental behaviour, would help to uncover the evidence around temperament and emotionality and the potential relationship with parental behaviours and children's EE behaviours.

Due to the continuing development of EE behaviours in research, it was not possible to address all the potential parent and child factors amongst others that may relate to children's EE behaviours. It may of course be possible that other PFP, strategies, or other forms of behaviours and emotionality may show an association with these maladaptive behaviours in preschool children. Future research could focus on the positive correlation between EUE and EOE behaviours and additional variables that could have an association with this relationship. With a recent systematic review finding eating behaviours changed in response to positive or negative emotions (Devonport et al., 2019), the differences in emotional stimulus or intensity may affect the use of either EOE or EUE behaviours in our preschool aged children. It may be that EUE and EOE behaviours, although distinct behaviours, are intrinsically linked by the change in eating

due to differing levels; fear versus sadness, and severities of emotion; acute versus chronic. With this suggested to be a factor in EE in adults (section 1.2.1.1), it would be beneficial to discover and explore the changes due to differing types of emotion in the development of this maladaptive eating behaviour in children.

Focusing on the diversity and inclusivity of the participant database in both the quantitative and qualitative studies, the understanding the differing cultural adaptations to eating behaviours would benefit the research, providing a more in depth and thorough analysis of the population, allowing a more inclusive study into cultural groups. With cross-sectional research (Blissett & Bennett, 2013) finding similarities and differences in PFP across cultures, future research focusing on a more diverse sample of participants would benefit from observational studies to explore the findings from both the cross-sectional study and interviews.

The use of observational methods would further benefit the research in addition to cultural diversity, by strengthening the findings from the path analysis and interviews. As discussed previously, self-report measures have been shown to correlate with behaviours observed within the use of feeding practices within the home environment. This idea of an observational follow up study, focusing on the factors explored in the path analysis would allow for a more in depth and inclusive look at the parent and child emotionality within a mealtime experience, as well as the part these would have to play within the use of feeding practices and EE behaviours. This could be achieved by using such methods as Ecological momentary assessment, which may involve a repeated sampling of participants feeding behaviours and experiences in a real time setting, in the parents' natural environment (Shiffman, Stone and Hufford, 2008). These potential observational findings would allow for causal inferences to be drawn and conclusions to be made regarding the directionality of the parent and child behaviours.

The findings of this thesis have important implications for understanding preschool aged children's EE behaviours. The findings, for example, fit within the ideas of differential susceptibility to the environment, with a long history of research on interactions between parenting and temperament (Belsky, Bakermans-Kranenburg & Ijzendoorn, 2007; Carnell & Wardle, 2007a). As such the children bring their own characteristics and vulnerabilities, which may make them more susceptible to environmental influences (Molle et al., 2017). For example, children high in food approach behaviours such as FR and EOE, in the context of parents with LAERS and EE behaviours, may develop worse outcomes than a child who did not have that initial risk factor. Regarding EUE, a child showing high levels of negative affectivity and low EF is perhaps at greater risk of EUE behaviours, in the context of a parent with LAERS and less responsive feeding practices, than the child with different appetite traits or temperaments. This is born out to some extent within the main path analysis findings of the thesis (figure 14), as parents' inability to regulate their own emotion is also positively associated with their negative affect in feeding and children's EUE behaviours (figure 19). In addition, parents LAERS alongside their own EE behaviours shows a significant positive relationship with both children's EUE and EOE behaviours (figure 21 & 22). This suggests the complex interplay previously discussed, with the parent's own inability to regulate their own emotions, in addition to the children's individual characteristics associated with maladaptive eating behaviours. This cross-sectional path analysis provides a starting point and the groundwork for further exploration with longitudinal cohort studies which observe a child's own individual characteristics, parental emotionality, and follow-up on preschool children's EE behaviours.

The integrated findings from both the path analysis and interviews could inform longitudinal studies, focusing on the child emotionality as the precursor to the parents subsequent behaviours. This would help by classifying certain behaviours found within

differing abilities to regulate emotions from both parent and child, and how these manifest as actions in the feeding environment. This research could be conducted using both questionnaires and observations in a feeding environment, highlighting the apparition and adaptation of parents behaviours in response to the emotionality.

Lastly, should the further research suggest causation, the practical use of the findings would guide development and testing of future parenting interventions. The key finding that child emotionality is the stimulus that drives the parents response could be furthered by exploring the cause and effect of children's traits, such as their emotionality and temperament, on the parents responsiveness to their behaviour. The path analysis has helped to uncover these relationships within the emotionality, practices, and behaviours; and findings furthering these would help support personalised interventions. As findings from the thesis suggest interventions to support parents with their children's eating behaviours cannot be a one-size-fits-all, but instead more of a personalised approach. Strategies implemented by the parent to prevent the development of EE must take into account the individual differences of emotionality and temperament in the child, and use these traits to inform the behaviours most beneficial for use by the parent.

Future research could focus on potential subgroups in terms of both parents' and child's emotionality, and look at ways to create tailored help and support parents when feeding their preschool aged child. This support should not be focused purely on the feeding practices used, but instead an amalgamation of the parent and child's individual differences, characteristics, understanding and ability to regulate emotions. The use of the findings within an intervention would benefit parent and child interactions within the mealtime, enabling parents to discover and adapt responses to create a calm and positive feeding experience. Due to the path analysis finding both an increase in child

negative affectivity and a parental LAERS being associated with a negative mealtime emotional state, after further work to establish causal effects, a personalised intervention focusing on the individual differences of the child, and the parents emotion regulatory abilities, could provide parents with knowledge, tips and strategies to overcome this. Building on current ideas and digital app-based interventions in the market such as the recent Child Feeding Guide (Haycraft et al., 2016), our findings could support and further parental support by providing information regarding the use of children's emotionality and temperament within the feeding environment. With Haycraft and colleagues (2016) providing tools and strategies to deal with fussy eating in mealtimes, the findings from this research would highlight and strengthen the importance of teaching parents the tools to recognise their children's individual differences and temperament. By acknowledging the importance of the emotionality within the feeding environment, the parent may be able to use proposed strategies to modify their or their child's emotion regulation to create a positive and successful feeding environment. Focusing on the notion that the child's emotionality may be driving the parents response, and our research findings showing difficult child temperament is associated with less positive affect in feeding, higher use of PFP, and associations with children's EE behaviours; breaking this cycle may support parents in positive PFP and PFS and reduce such maladaptive eating behaviours as EE.

6.5. Conclusions

In summary, this thesis highlights many novel and innovative findings regarding the relationship between parent and child emotionality, PFP and EE behaviours in preschool aged children. Through the use of a mixed methods methodology and research design,

it presents evidence to suggest that the relationship between PFP and EE in preschool aged children is not necessarily a straightforward one. There is a complex interplay of emotional factors within the feeding environment: the parents' ability to regulate and manage their own emotions, the emotional affect in feeding, and the child's own temperament and individual characteristics, all have a part to play in the likelihood of certain PFP used and its association with children's EE behaviours. The key finding from the research, with children's emotionality as the potential stimulus that drives the parents response, using PFP that may or may not be beneficial in that current feeding environment. These factors may in turn effectuate a differing behavioural response due to the change or intensity in emotionality in the given situation. Delving into the findings from both the quantitative path analysis and qualitative interview studies have helped to explain the challenges parents face when creating positive and adaptive eating behaviours in children.

Finally, the findings of this thesis will help to identify emotionality and feeding behaviours that may be a precursor for children's maladaptive eating behaviours and weight change. Understanding what practices may be at play within EE behaviours could guide future support for parents, providing knowledge and highlighting the most adaptive feeding strategies and techniques based on their own ability to regulate their own emotions alongside the temperament of their child.

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8. Appendices, Tables, Completed Publications.

8.1. Systematic Literature Review – Data Extraction Form

General Information	Researcher
	Extraction Date
Identification features	Record number
	Author
	Article title
	Citation
	Country of origin
	Date of Study
Study characteristics	Research Setting
	Aim/objectives
	Hypothesis
	Study design
	Recruitment setting
Participant Parent characteristics	Mean Age
	Gender
	Ethnicity
	Socio-economic status
	Other demographics
	Weight Status
	Number of participants enrolled
	Number of participants at baseline
	Number of participants at follow up
	Number of withdrawals (ppts)
	Number of exclusions (ppts)
	Number lost to follow up (ppts)
Participant Child characteristics	Mean Age
	Gender (% female)
	Weight Status (either by % of weight) state the weight measure being used

	Number of participants enrolled
	Number of participants included in analysis
	Number of withdrawals (ppts)
	Number of exclusions (ppts)
	Number lost to follow up (ppts)
Setting	Setting
	Description
	Study Context (community /school/nursery) Lab / Longitudinal)
Measures	Unit of assessment/analysis
	Measurement tool or method used (Feeding)
	Measurement tool or method used (eating)
	Measurement tool or method used (other)
	Subscales used
	Summary outcome data
	Other measures
Analysis	Type of analysis used in study
	Results of study analysis
	Types of Feeding Practices
	Outcome Measure of Emotional Eating
	Analysis Results (including mean and sd)
	Other Statistics
	Effect Sizes
	Correlations Beta weights Odds ratios P values Trends for ordinal data F statistics
Conclusion	Study Conclusion
	Other Comments

8.2. Systematic Literature Review – Quality Assessment 14-item Criteria Data Extraction Form

Criteria

1. Was the research question or objective in this paper clearly stated?

2. Was the study population clearly specified and defined?

3. Was the participation rate of eligible persons at least 50%?

4. Were all the subjects selected or recruited from the same or similar populations (including the same time period? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?

5. Was a sample size justification, power description, or variance and effect estimates provided?

6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?

7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?

8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?

9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?

10. Was the exposure(s) assessed more than once over time?

11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?

12. Were the outcome assessors blinded to the exposure status of participants?

13. Was loss to follow-up after baseline 20% or less?

14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?

8.3. Quantitative – Participant Recruitment Poster

Is your Child between 3-5 years old?

We are looking for Parents to complete an Online Questionnaire about

Parents Feeding and Children's Eating Behaviours

The Questionnaire should take 10-15 minutes to complete and is completely anonymous.

At the end, you may leave your details to be entered in a Prize Draw. There are £250 of Love2Shop Vouchers to be won.

To begin, please simply scan the QR Code, or type in to your Internet / Phone browser:

Bit.ly/faeq18

Content removed on data protection grounds

8.4. Quantitative – Participant Information Sheet

Exploring Parental Feeding Practices and their Preschool Child's Eating Behaviours

You are being invited to take part in research on parental emotions and feeding practices and preschool children's eating behaviours. Rachael Molitor, PhD student at Coventry University is leading this research. Before you decide to take part, it is important you understand whythe research is being conducted and whatit will involve. Please take time to read the following information carefully.

What is the purpose of the study?
The aim of the study is to explore the relationship between parental emotions, feeding practices and behaviours, and preschool aged children's eating behaviours, specifically emotional eating within the feeding environment.

Why have I been chosen to take part?
You are invited to participate in this study because you are a parent of a pre-school child between 3 and 5 years of age. To take part within this study we ask you are able to understand, read and write English to a coherent level, and that you and your child does not have any medical condition that may affect eating or weight.

What are the benefits of taking part?
By sharing your experiences with us, you will be helping Rachael and Coventry University to better understand the relationship between the feeding environment and behaviours, and the preschool aged child's eating behaviours. As a thank you for taking part you have the opportunity to be entered in to a prize draw for a number of Love2Shop vouchers as a thank you for your time. If you would like to enter the prize draw, please fill in your details on the additional page at the end of the questionnaire named 'Prize Draw Information', which we will be kept separate from consent and questionnaire data.

Are there any risks associated with taking part?
This study has been reviewed and approved through Coventry University's formal research ethics procedure. There are no significant risks associated with participation. We ask that you complete all of the questions to aid our research, however if there are any questions you feel uncomfortable to answer, please leave it blank and go on to the next question.

Do i have to take part?
No – it is entirely up to you. If you do decide to take part, please keep this information sheet and complete the informed consent form to show that you understand your rights in relation to the research, and that you are happy to participate. Your participation in the survey is entirely voluntary, and you can opt out at any stage by closing and exiting the browser (online) or destroying the questionnaire (paper copy). Your answers will be treated confidentially and the information you provide will be kept anonymous in any research outputs/publications. Because your answers will be anonymised, it will not be possible to withdraw them from the study once you have completed the questionnaire.

What will happen if i decide to take part?

You will be asked a number of questions regarding your eating behaviours, feeding practices, and your child's eating behaviours. You will be answering on behalf of yourself for part of the questionnaire, and on behalf of your child for the other. The questionnaire will take place online (or printed copy will be sent if online is not possible) at a time convenient to you. The questionnaire should take around 20-30 minutes to complete.

Data protection and confidentiality

Your data will be processed in accordance with the general data protection regulation 2016 (GDPR) and the data protection act 2018. All information collected about you will be kept strictly confidential, and your data will be fully anonymised, meaning there is no identifiable data that can be traced back to yourself. Your data will only be viewed by the researcher/research team. All electronic data will be stored on a password-protected computer file and if moved, on an encrypted memory stick. All paper records will be scanned in and kept as a password protected PDF copy and the original will be destroyed. Your consent information will be kept separately from your responses in order to minimise risk in the event of a data breach. The lead researcher will take responsibility for data destruction and all collected data will be destroyed as soon it has been analysed for the research.

Data protection rights

Coventry university is a data controller for the information you provide. You have the right to access information held about you. Your right of access can be exercised in accordance with the general data protection regulation and the data protection act 2018. You also have other rights including rights of correction, erasure, objection, and data portability. For more details, including the right to lodge a complaint, please visit www.ico.org.uk. Questions, comments and requests about your personal data can also be sent to the university data protection officer - enquiry.ipu@coventry.ac.uk

What will happen with the results of this study?

The results of this study may be summarised in published articles, reports and presentations. Quotes or key findings will always be made anonymous in any formal outputs unless we have your prior and explicit written permission to attribute them to you by name.

Making a complaint

Content removed on data protection grounds

8.5. Quantitative – Consent Form

Examining the role of Parent Emotional Self-Regulation in Preschool Children's Emotional Eating

You are invited to take part in this research study for the purpose of collecting data on Parents own emotional self-regulation and the relationship this may have on their feeding practices with their pre-school aged child

Having now read the previous information page, please do not hesitate to ask questions if anything is unclear or if you would like more information about any aspect of this research. It is important that you feel able to take the necessary time to decide whether or not you wish to take part.

If you are happy to participate, please confirm your consent by circling/clicking YES against each of the below statements and then signing and dating the form as participant. You will only be able to continue to the questionnaire by selecting and agreeing to each of the statements below:

	NO	YES
I confirm that I have read and understood the Participant Information Sheet for the above study and have had the opportunity to ask questions	●	○
I understand my participation is voluntary	●	○
I understand that, because my answers will be anonymised, it will not be possible to withdraw them from the study once I have completed the survey.	●	○
I understand that all the information I provide will be held securely and treated confidentially	●	○
I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs	●	○
I confirmed that my child I will be completing the questionnaire about is between 3 and 5 years old	●	○
I confirm that there are no known medical conditions that may affect both my, or my child's, eating or weight status.	●	○
I understand by entering the prize draw, the researcher will hold my contact details until completion, and may contact me in the future regarding this study and/or the prize draw.	●	○
I agree to take part in the above study	●	○

Please Sign to say you agree to the above and wish to continue

8.6. Quantitative – Demographic Information Sheet

Background Information

Please complete much information as possible about yourself in the questionnaire below
All information will be confidential and nothing will be linked to you personally in any way.

About You

Please complete / circle as appropriate:

What is your current age:

What is your gender:

Male	Female	Other

What is your ethnicity?

What is your current Postcode?

What is your country of residence?

What is your education level? (if other please specify)

High School	College	University	Postgraduate	Other

What is current employment status? (if other please specify)

Full-time	Part-time	Unemployed	Unable to Work	Other

What is your current height? (Feet and Inches / CM's - please specify measure)

What is your current weight? (Stone and Lbs / Kg– please specify measure)

Do you have a medical condition that may affect your weight?
(To continue with the survey then you must be option 'No')

Yes	No

About your Household

Please circle as appropriate:

What is your marital status:

Single	Married	Divorced	Widowed	Living Together	Other

How many children are currently within your household?

1	2	3	4	4+

How many children in your household are currently pre-school aged?

1	2	3	4	4+

About Your Pre-school aged Child

In this questionnaire we ask you to report on only one of your children.
If you have more than 1 child, please report on the youngest child in the age range of 3-5

Please circle as appropriate:

The age of your Youngest Child (between 3-5 years old):

3	4	5

Current Clothing size in general clothing stores:

1.5 - 2 Years	2 - 3 Years	3 - 4 Years	4 - 5 Years	5 - 6 Years	6 - 7 Years	Over 7 Years

Last height measurement in CM or Feet / Inches (please specify measure)

How was this height measured: (if other please specify)

Myself	Doctors	Pre-school	Other

Last weight measurement in kg / lbs (please specify measure)

How was this weight measured: (if other please specify)

Myself	Doctors	Pre-school	Other

8.7. Quantitative – Questionnaire

This Questionnaire will now look to gather information on your child, and your current feeding styles and practices with your youngest child (between the ages of 3-5 years old).

Please answer as much as you can about your youngest pre-school aged child between 3-5 years old:

Please answer the following questions as honestly as possible with your youngest 3-5 year old child in mind.

	Never	Rarely	Sometimes	Mostly	Always
When this child gets fussy, is giving him/her something to eat or drink the first thing you do?	○	○	○	○	○
Do you give this child something to eat or drink if s/he is bored even if you think s/he is not hungry?	○	○	○	○	○
Do you give this child something to eat or drink if s/he is upset even if you think s/he is not hungry?	○	○	○	○	○
My child should always eat all of the food on his/her plate.	○	○	○	○	○
I have to be sure that my child does not eat too many high-fat foods.	○	○	○	○	○
I offer my child his/her favourite foods in exchange for good behaviour.	○	○	○	○	○

	Never	Rarely	Sometimes	Mostly	Always
If I did not guide or regulate my child's eating, s/he would eat too much of his/her favourite foods.	○	○	○	○	○
I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behaviour.	○	○	○	○	○
I encourage my child to eat less so he/she won't get fat.	○	○	○	○	○
If I did not guide or regulate my child's eating, s/he would eat too many junk foods.	○	○	○	○	○
I give my child small helpings at meals to control his/her weight.	○	○	○	○	○
If my child says, —I'm not hungry, I try to get him/her to eat anyway.	○	○	○	○	○

	Never	Rarely	Sometimes	Mostly	Always
If my child eats more than usual at one meal, I try to restrict his/her eating at the next meal.	○	○	○	○	○
I restrict the food my child eats that might make him/her fat.	○	○	○	○	○
There are certain foods my child shouldn't eat because they will make him/her fat.	○	○	○	○	○
I withhold sweets/dessert from my child in response to bad behavior.	○	○	○	○	○
If my child eats only a small helping, I try to get him/her to eat more.	○	○	○	○	○
I have to be sure that my child does not eat too much of his/her favourite foods.	○	○	○	○	○

	Never	Rarely	Sometimes	Mostly	Always
I don't allow my child to eat between meals because I don't want him/her to get fat.	○	○	○	○	○
I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, or pastries)	○	○	○	○	○
I often put my child on a diet to control his/her weight.	○	○	○	○	○
When he/she says he/she is finished eating, I try to get my child to eat one more (two more, etc.) bites of food.	○	○	○	○	○

Please answer the following questions as honestly as possible with your youngest 3-5 year old child in mind.

	Never	Seldom	Sometimes	Often	Always
My child loves food	○	○	○	○	○
My child eats more when worried	○	○	○	○	○
My child is interested in food	○	○	○	○	○
My child eats less when angry	○	○	○	○	○
My child eats less when s/he is tired	○	○	○	○	○
My child is always asking for food	○	○	○	○	○

	Never	Seldom	Sometimes	Often	Always
My child eats more when annoyed	○	○	○	○	○
If allowed to, my child would eat too much	○	○	○	○	○
My child eats more when anxious	○	○	○	○	○
Given the choice, my child would eat most of the time	○	○	○	○	○
My child looks forward to mealtimes	○	○	○	○	○
My child enjoys eating	○	○	○	○	○

	Never	Seldom	Sometimes	Often	Always
My child eats more when she is happy	○	○	○	○	○
My child eats less when upset	○	○	○	○	○
My child eats more when s/he has nothing else to do	○	○	○	○	○
Even if my child is full up s/he finds room to eat his/her favourite food	○	○	○	○	○
If given the chance, my child would always have food in his/her mouth	○	○	○	○	○

Please read each statement and decide whether it is a"true" or "untrue" description of your child's reaction within the past six months. If you have never seen the child in that situation, please circle NA

My child:

	Extremely Untrue	Quite Untrue	Slightly Untrue	Neither true nor untrue	Neither true nor untrue	Slightly True	Quite true	Extremely True	NA
Seems always in a big hurry to get from one place to another.	○	○	○	○	○	○	○	○	○
Gets quite frustrated when prevented from doing something s/he wants to do.	○	○	○	○	○	○	○	○	○
When drawing or colouring in a book, shows strong concentration.	○	○	○	○	○	○	○	○	○
Likes going down high slides or other adventurous activities.	○	○	○	○	○	○	○	○	○
Is quite upset by a little cut or bruise.	○	○	○	○	○	○	○	○	○
Prepares for trips and outings by planning things s/he will need.	○	○	○	○	○	○	○	○	○
Often rushes into new situations.	○	○	○	○	○	○	○	○	○
Tends to become sad if the family's plans don't work out.	○	○	○	○	○	○	○	○	○

	Extremely Untrue	Quite Untrue	Slightly Untrue	Neither true nor untrue	Neither true nor untrue	Slightly True	Quite true	Extremely True	NA
Likes being sung to.	○	○	○	○	○	○	○	○	○
Seems to be at ease with almost any person.	○	○	○	○	○	○	○	○	○
Is afraid of burglars or the "boogie man."	○	○	○	○	○	○	○	○	○
Notices it when parents are wearing new clothing.	○	○	○	○	○	○	○	○	○
Prefers quiet activities to active games.	○	○	○	○	○	○	○	○	○
When angry about something, s/he tends to stay upset for ten minutes or longer.	○	○	○	○	○	○	○	○	○
When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.	○	○	○	○	○	○	○	○	○
Likes to go high and fast when pushed on a swing.	○	○	○	○	○	○	○	○	○

	Extremely Untrue	Quite Untrue	Slightly Untrue	Neither true nor untrue	Neither true nor untrue	Slightly True	Quite true	Extremely True	NA
Seems to feel depressed when unable to accomplish some task.	○	○	○	○	○	○	○	○	○
Is good at following instructions.	○	○	○	○	○	○	○	○	○
Takes a long time in approaching new situations.	○	○	○	○	○	○	○	○	○
Hardly ever complains when ill with a cold.	○	○	○	○	○	○	○	○	○
Likes the sound of words, such as nursery rhymes.	○	○	○	○	○	○	○	○	○
Is sometimes shy even around people s/he has known a long time.	○	○	○	○	○	○	○	○	○
Is very difficult to soothe when s/he has become upset.	○	○	○	○	○	○	○	○	○
Is quickly aware of some new item in the living room.	○	○	○	○	○	○	○	○	○

	Extremely Untrue	Quite Untrue	Slightly Untrue	Neither true nor untrue	Neither true nor untrue	Slightly True	Quite true	Extremely True	NA
Is full of energy, even in the evening.	○	○	○	○	○	○	○	○	○
Is not afraid of the dark.	○	○	○	○	○	○	○	○	○
Sometimes becomes absorbed in a picture book and looks at it for a long time.	○	○	○	○	○	○	○	○	○
Likes rough and rowdy games.	○	○	○	○	○	○	○	○	○
Is not very upset at minor cuts or bruises.	○	○	○	○	○	○	○	○	○
Approaches places s/he has been told are dangerous slowly and cautiously.	○	○	○	○	○	○	○	○	○
Is slow and unhurried in deciding what to do next.	○	○	○	○	○	○	○	○	○
Gets angry when s/he can't find something s/he wants to play with.	○	○	○	○	○	○	○	○	○

	Extremely Untrue	Quite Untrue	Slightly Untrue	Neither true nor untrue	Neither true nor untrue	Slightly True	Quite true	Extremely True	NA
Enjoys gentle rhythmic activities such as rocking or swaying.	○	○	○	○	○	○	○	○	○
Sometimes turns away shyly from new acquaintances.	○	○	○	○	○	○	○	○	○
Becomes upset when loved relatives or friends are getting ready to leave following a visit.	○	○	○	○	○	○	○	○	○
Comments when a parent has changed his/her appearance.	○	○	○	○	○	○	○	○	○

This Questionnaire will now look to gather information on you and your emotions and eating behaviours.

Please answer as much as you can about your yourself:

Please answer the following questions as honestly as possible with you in mind:

	Never	Seldom	Sometimes	Often	Very Often
Do you have the desire to eat when you are irritated?	○	○	○	○	○
Do you have a desire to eat when you have nothing to do?	○	○	○	○	○
Do you have a desire to eat when you are depressed or discouraged?	○	○	○	○	○
Do you have a desire to eat when you are feeling lonely?	○	○	○	○	○
Do you have a desire to eat when somebody lets you down?	○	○	○	○	○

	Never	Seldom	Sometimes	Often	Very Often
Do you have a desire to eat when you are cross?	○	○	○	○	○
Do you have a desire to eat when you are approaching something unpleasant to happen?	○	○	○	○	○
Do you get the desire to eat when you are anxious, worried or tense?	○	○	○	○	○
Do you have a desire to eat when things are going against you or when things have gone wrong?	○	○	○	○	○
Do you have a desire to eat when you are frightened?	○	○	○	○	○

	Never	Seldom	Sometimes	Often	Very Often
Do you have a desire to eat when you are disappointed?	○	○	○	○	○
Do you have a desire to eat when you are emotionally upset?	○	○	○	○	○
Do you have a desire to eat when you are bored or restless?	○	○	○	○	○

Please answer the following questions as honestly as possible with you in mind:

	Almost Never	Sometimes	About half of the time	Most of the time	Almost always
I am clear about my feelings.	○	○	○	○	○
I pay attention to how I feel	○	○	○	○	○
I have no idea how I am feeling.	○	○	○	○	○
I have difficulty making sense out of my feelings.	○	○	○	○	○
I am attentive to my feelings.	○	○	○	○	○
I know exactly how I am feeling	○	○	○	○	○
I care about what I am feeling	○	○	○	○	○

	Almost Never	Sometimes	About half of the time	Most of the time	Almost always
I am confused about how I feel	○	○	○	○	○
When I'm upset, I acknowledge my emotions	○	○	○	○	○
When I'm upset, I believe that I will remain that way for a long time.	○	○	○	○	○
When I'm upset, I believe that I'll end up feeling very depressed	○	○	○	○	○
When I'm upset, I believe that my feelings are valid and important	○	○	○	○	○
When I'm upset, I know that I can find a way to eventually feel better	○	○	○	○	○
When I'm upset, I believe that there is nothing I can do to make myself feel better.	○	○	○	○	○

	Almost Never	Sometimes	About half of the time	Most of the time	Almost always
When I'm upset, I start to feel very bad about myself.	○	○	○	○	○
When I'm upset, I believe that wallowing in it is all I can do	○	○	○	○	○
When I'm upset, I take time to figure out what I'm really feeling	○	○	○	○	○
When I'm upset, it takes me a long time to feel better.	○	○	○	○	○
When I'm upset, my emotions feel overwhelming	○	○	○	○	○

How often have you felt this way when FEEDING your child?

	Never	Rarely	Sometimes	Most of the time	Always
Connected	○	○	○	○	○
Exhausted	○	○	○	○	○
Angry	○	○	○	○	○
Loved	○	○	○	○	○
Unappreciated	○	○	○	○	○
Relaxed	○	○	○	○	○
Energetic	○	○	○	○	○

	Never	Rarely	Sometimes	Most of the time	Always
Lonely	○	○	○	○	○
Frustrated	○	○	○	○	○
Rejected	○	○	○	○	○
Rewarded	○	○	○	○	○
Overwhelmed	○	○	○	○	○
Anxious	○	○	○	○	○
Content	○	○	○	○	○

	Never	Rarely	Sometimes	Most of the time	Always
Unloved	○	○	○	○	○
Tense	○	○	○	○	○
Reassured	○	○	○	○	○
Panicky	○	○	○	○	○
Strung out	○	○	○	○	○
Happy	○	○	○	○	○

8.8. Quantitative – Debrief Sheet

Thank you for taking part in the study.

If you wish to enter the prize draw, please fill in any of the contact details below.

Please ensure they are correct before submitting, as we will only have this information to contact you if you have won!

Your contact information will be extracted from the questionnaire separately, ensuring your contact information is not linked to your questionnaire data in any way.

(If you do not wish to enter the prize draw, just leave this information blank and press next)

Contact Name:

Email address:

Telephone Number:

Thank you for taking part in the study.

The purpose of this study is to explore parents emotions during feeding and its relationship with their feeding practices, and the eating behaviours of their preschool children. Based on past research, feeding practices are suggested to have an association with childhood eating behaviours, and we are interested in the relationship this may with parents emotions and their eating behaviours. The answers you give in the questionnaire will help to guide the research, and support future research as part of a PhD study.

As stated earlier:
All responses to questions will be confidential and only seen by the researchers for analysis.
Your answers will remain anonymous and not be traced back to you in any way.
Any contact details you give for the prize draw will be kept separately to your consent form and questionnaire.

Once again, if you have any questions, please feel free to contact:
Rachael Molitor

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8.9. Quantitative R Code

	Association between Variables	R Code
1	Parental Feeding Practices and Children's Eating Behaviours	CEB.EOE + CEB.EUE + CEB.EF + CEB.FR ~ PFP.PTE + PFP.UFER + PFP.UFAR + PFP.RW + PFP.RH
2	Parent Emotion Regulation and Children's Eating Behaviours	CEB.EOE + CEB.EUE + CEB.EF + CEB.FR ~ PER.LAERS + PER.LEA + PER.LEC
3	Parent Emotional Eating and Children's Eating Behaviours	CEB.EOE + CEB.EUE + CEB.EF + CEB.FR ~ PEE.EE
4	Parent Emotion Regulation and Parents Emotional Eating	PEE.EE ~ PER.LAERS + PER.LEA + PER.LEC
5	Parental Feeding Practices and Parent Emotion Regulation	PER.LAERS + PER.LEA + PER.LEC ~ PFP.PTE + PFP.UFER + PFP.UFAR + PFP.RW + PFP.RH
6	Parent Emotion Regulation and Parental Feeding Practices	PFP.PTE + PFP.UFER + PFP.UFAR + PFP.RW + PFP.RH ~ PER.LAERS + PER.LEA + PER.LEC
7	Child Temperament and Parental Feeding Practices	PFP.PTE + PFP.UFER + PFP.UFAR + PFP.RW + PFP.RH ~ CT.NA + CT.ES + CT.EC
8	Parent Affect in Feeding and Parental Feeding Practices	PFP.PTE + PFP.UFER + PFP.UFAR + PFP.RW + PFP.RH ~ PA.POSA + PA.NEGA
9	Parent Emotion Regulation and Parent Affect in Feeding	PA.POSA + PA.NEGA ~ PER.LAERS + PER.LEA + PER.LEC
10	Child Temperament and Parent Affect in Feeding	PA.POSA + PA.NEGA ~ CT.NA + CT.ES + CT.EC
11	Parent Emotion Regulation and Child Temperament	CT.NA + CT.ES + CT.EC ~ PER.LAERS + PER.LEA + PER.LEC
12	Children's Eating Behaviours and Children's Emotional Overeating	CEB.EOE ~ CEB.EF + CEB.FR
13	Children's Eating Behaviours and Children's Emotional Undereating	CEB.EUE ~ CEB.EF + CEB.FR
14	Child Temperament and Children's Eating Behaviours	CEB.EOE + CEB.EUE + CEB.EF + CEB.FR ~ CT.NA + CT.ES + CT.EC
15	Parent Affect in Feeding and Children's Eating Behaviours	CEB.EOE + CEB.EUE + CEB.EF + CEB.FR ~ PA.POSA + PA.NEGA

8.10. Qualitative – Interview Schedule

10	Interview Questions	Prompt Questions
Parental Feeding Practices	Can you describe to me an average mealtime experience, when feeding your preschool aged child?	Are there any challenges you face during mealtime?
	How do you get your preschool aged child to eat things they don't like?	How does this make you feel?
	How would you describe the experience of mealtimes with your preschool aged child?	
	If you've had a busy day or been away from the house / family, how would that have an effect on feeding your preschool aged child?	
	How would you describe "planning" in what to feed your preschool aged child?	
	What sort of things have you found difficult with getting your child to eat?	How have you managed this?
		How does it make you feel?
Child Eating Behaviours	How is your preschool child in trying new things? New foods?	How does that make you feel?
		How does that play out the rest of the day?
	How would you describe your child's relationship to food?	
	If your child finishes all the food on for their dinner, what happens next?	
	When your child is upset or in distress / happy and having fun, how may that affect their eating?	
Child Temperament	Can you describe your child's character?	How would work for the rest of the day / evening?

	How is your child in a feeding environment?	Can you describe any feeding or eating experiences that have particularly stuck out?
	If the child is challenging / tricky, how does the experience feeding your preschool aged child play out?	How would this affect the rest of the day/evening?
	How would you describe your preschool aged child behaviour during feeding?	And mealtimes? How does that play out? What does that look like?
	How is your child at eating, do they have any particular things they tend to do during mealtimes? [traits / behaviours]	
	When your child is upset or in distress / happy and having fun, how may that affect their eating?	
	If your child has done something particularly good/naughty, how would you look at rewarding/punishing that behaviour?	
	How does your preschool child cope with new feeding / eating situations (e.g. eating with new people or in a restaurant)?	How does that make you feel? How may that affect feeding behaviours?
Parental Eating Behaviours	How would you describe your relationship with eating and food?	
	How does your own personality and relationship with food play out during the day?	
	How would "how your day is going" affect your eating throughout the day?	*If your day is going / not going to plan…* *If you would have had a stressful or difficult day…*

		If you've had a great day, how would that affect how you feel for the rest of the day?
		If you've had a great day, how would this affect your eating for the rest of the day?
Parent Emotion Regulation	Thinking about if you've had a good or a bad day, how would "how you feel" carry on for the rest of the evening?	How would you describe your mood for the rest of the evening?
	If you've had a challenging day or it's not going to plan, how long would 'how you feel' continue on throughout the day?	Is there anything that makes you feel better, or would you say, go to bed in that similar mind frame?
Parent affect	How do you feel if your child has not finished everything on their plate?	What would you do in this instance?
		How does that make you feel?
	How would you say you feel during mealtimes, in particular when feeding your preschool aged child?	
	Thinking about this more, would "how you feel" have an impact on how and what you give your child to eat at mealtime?	

8.11. Qualitative – NVIVO Coding

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